

THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. 69: No. 6.

New York, Thursday, February 6, 1902.

\$5.00 a Year, including Postage.
Single Copies, Ten Cents.

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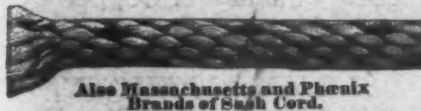


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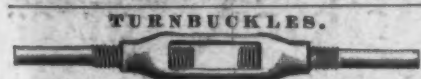


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See Page 138.

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THE IRON AGE

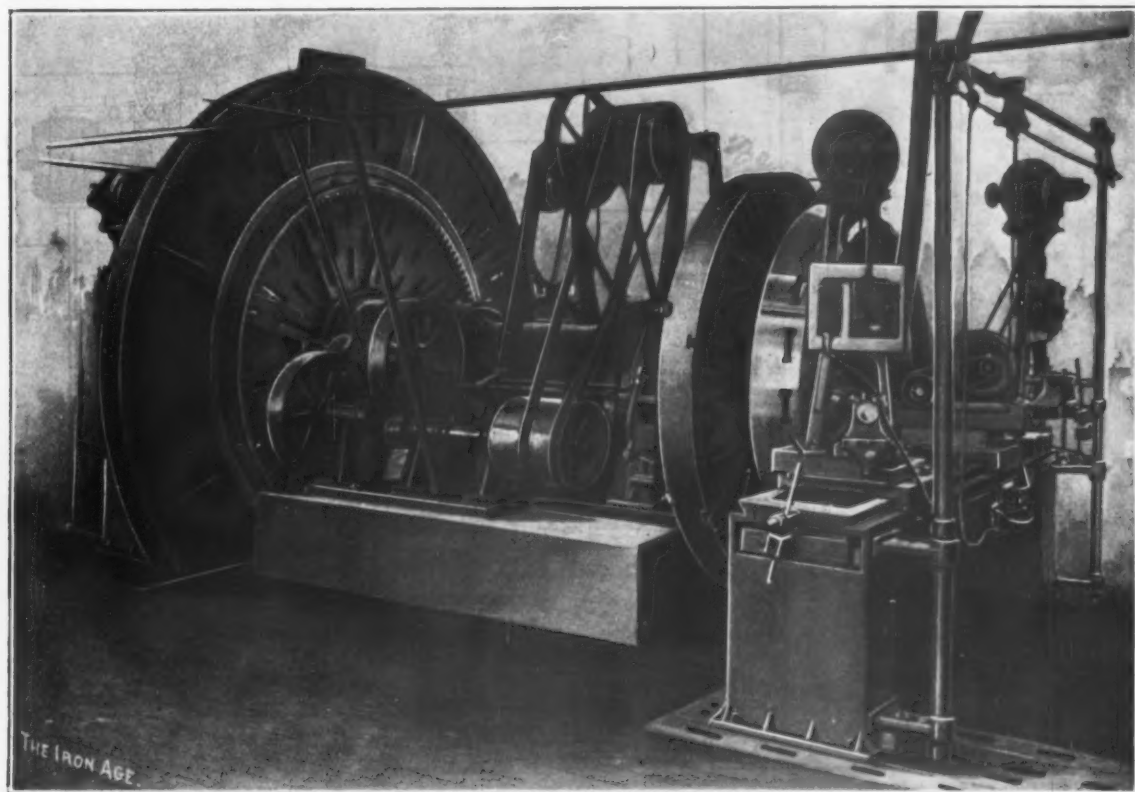
THURSDAY, FEBRUARY 6, 1902.

The Hibbard Reversible Grinding Machine.

Two Face Plates; Four Independent Grinders.

In the manufacture of safes and vaults, as carried on by the Hibbard-Rodman-Ely Safe Company of 253 Broadway, New York, the steel used is so hard that it is absolutely impossible to machine it in the ordinary way, even with the hardest cutting tools and most powerful machinery for driving them. It is therefore necessary to remove all surplus metal by grinding, this being

It will therefore be understood from what we have said that these grinding machines must not only be capable of removing stock rapidly, but also, in the final stages, be able to do work of the greatest possible accuracy. In general but two classes of work are required—namely, plane and curved surfaces. The machines which perform these operations are, naturally, of two classes. In the first—truly flat surfaces—the piece is held immovably, the grinder traveling along the surface to be finished. In the second—curved surfaces—the piece is revolved, the grinder traversing over the surface along a line determined by whether the piece is to be



View Showing Reversing Mechanism.

THE HIBBARD REVERSIBLE GRINDING MACHINE.

the only practicable method known at the present time; and since many of the component parts of a large safe or vault are of massive proportions this fact and the hard nature of the material make essential the employment of grinding machines which in their design, construction and operation are far removed from the ordinary type. These considerations have led to the development of a class of grinders, if we may so term them, which are unique in the work they do and the way in which they do it. In work of this character fits of the greatest accuracy are of the utmost importance, as without accuracy the value of the completed structure would be invalidated. The rough blanks or pieces, as received at the works, are as near size as it is possible to make them, but no dimensions are less than those called for in the specifications, for the simple reason that while it is possible to remove surplus material it is impossible to supply a deficiency. The metal in each piece forming a part of the whole structure must be integral throughout, as any attempt at patching would destroy the efficiency of the completed vault.

ground as a cylinder, or a cone, or upon its end. In the present article we only have to do with the machine for circular grinding, in which the work revolves.

This machine is the invention of Henry D. Hibbard, vice-president of the Hibbard-Rodman-Ely Safe Company, and is now in operation at their works, Plainfield, N. J. It not only meets all the requirements enumerated above and considered as being prerequisite, but it also performs another and most important function. Frequently on the pieces or blanks there are imperfections or projecting portions which must be removed. In ordinary grinding operations these portions can only be operated upon once during each full revolution of the piece. Therefore if the projecting portion is small, compared with the entire circumference to be ground, the machine will be doing useful work only during a small part of each revolution. In a grinding action it is well known that only a very small amount of metal is removed during each step, and if a complete revolution, either of the tool or work, must be taken to remove a small spot the work is slow and expensive.

vicinity of Chicago is continually growing, and the capacity of the blast furnaces available for meeting the requirements of the foundry trade is not only inadequate at present, but promises to become much more so, if arrangements are not made to increase it. The company will erect a blast furnace with a capacity of 350 tons a day. The work of construction will begin as quickly as possible, and it is hoped that the furnace can be ready for operation within 12 months. The company have a fine location on the Calumet River, with dock facilities for receiving ore by lake vessel, and have ample room for greatly enlarging their manufacturing operations.

Canadian News.

Manufacturers Want More Protection.

TORONTO, January 31, 1902.—A deputation from the Canadian Manufacturers' Association waited on the Dominion Government last week and presented several petitions. First they asked for certain amendments to

It was further brought to the attention of the Minister of Customs that, contrary to the customs law, considerable quantities of prison made goods had been brought into Canada from the United States. The goods in question were stated to be chiefly hardware and wearing apparel.

Representatives of the iron and steel industries had a conference with the Minister of Finance touching the need for keeping the duties on their lines in pace with manufacturing developments. For example, it was pointed out that steel rails and structural iron had formerly to be imported. Now, however, works exist, or will shortly exist, in Canada for the production of rails and structural forms. No intimation was given by the Ministers that the views of the petitioners would be met by any immediate change in the tariff, but as the deputation included many influential supporters of the present Government it would not be surprising if some of the requests were conceded. A duty on steel rails may be decided on, though last year the Minister of Finance said the Government preferred assisting Canadian rail

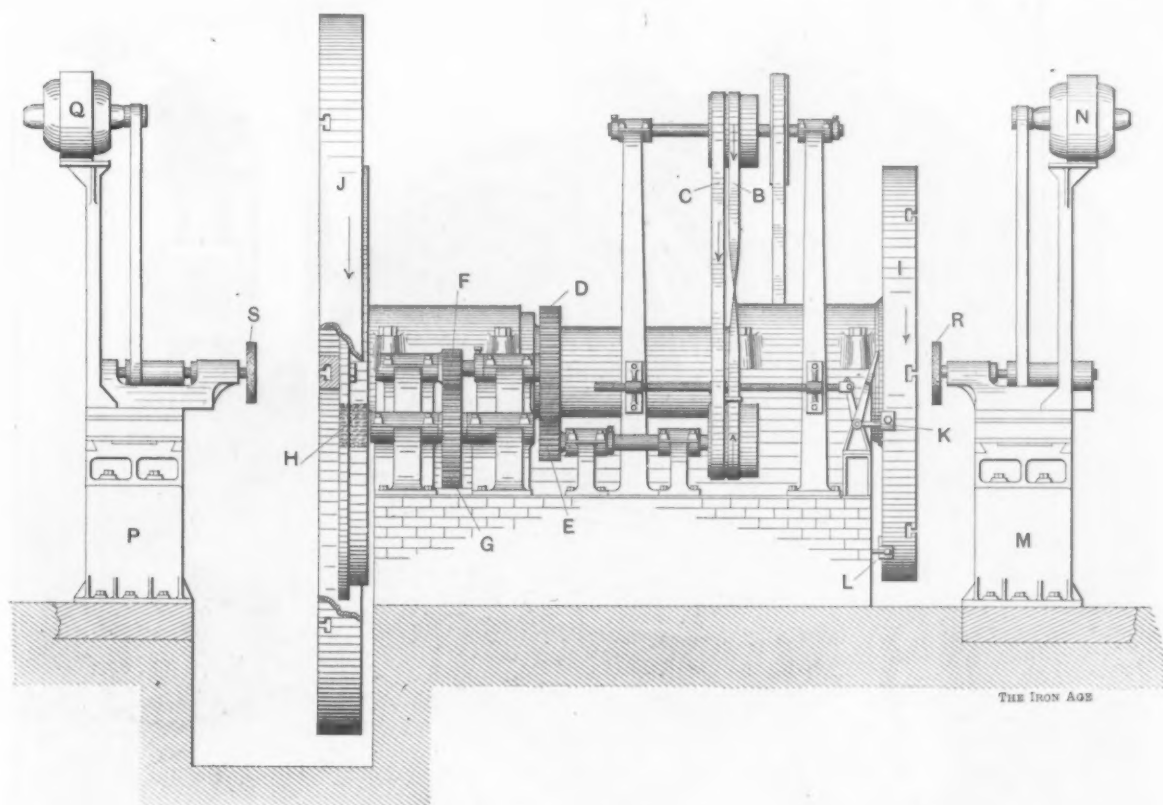


Fig. 3.—Diagrammatic Side Elevation.

THE HIBBARD REVERSIBLE GRINDING MACHINE.

the patent act and for such reforms in the Patent Office as would facilitate its operations, considered to be now too cumbersome and slow. It was recognized and admitted to be impossible for any thorough revision of the patent act to be carried through in the next session of Parliament, but the deputation indicated a few points in which the law could be altered remedially for the time being and thus check certain modes of infringement that manufacturers are exposed to. An increase in the staff was recommended to overtake arrears of business in the Patent Office.

Another protest was made against irregularities of appraisement for customs duties. Job lots, it was represented, are imported from the United States and elsewhere at an undervaluation. It was urged that the true value of such goods be in all cases obtained and the ad valorem duty assessed accordingly. An invoice, it was pointed out, is not a safe guide to follow. They are likely to be a correct statement of the actual bargain rate at which the goods were sold, but not always the market price current in the country of production.

manufacturers by giving them Government contracts, such as that given the Algoma Steel Company for the Intercolonial Railway.

At the annual meeting of the Board of Trade of Brantford, one of Canada's leading manufacturing cities, the following resolution was carried by a unanimous vote:

"That in view of the present conditions of trade and the expansion of Canadian industries, it is highly desirable that the Government revise the present tariff with a view to the preservation of our markets against unfair competition, thus assisting to maintain and increase our present industries and to establish new ones."

Strong speeches were made in support of the resolution. Mr. Waterous called for equality of tariffs as between Canada and the United States. In 1890, he said, agricultural machines to the value of \$1,500,000 were imported from the United States. In 1900 the importation rose to over \$2,000,000. Other speakers advocated a leveling up of the Canadian tariff to the American standard.

Niagara Power Companies.

The report of the Commissioners of the Queen Victoria Niagara Falls Park was laid before the Ontario Legislature a few days ago. New agreements have been entered into with both the Canadian Niagara Power Company and the Ontario Niagara Power Company. To the former has been conceded an extension of time. Of course this is a matter to be ratified by legislation, and a bill has already been submitted to the House for the purpose. By the amended agreement the Canadian Niagara Power Company are bound to expend \$250,000 on their works before July 1, 1902, and \$1,500,000 before July 1, 1903, and to complete before July 1, 1904, water connections for the development of 50,000 horse-power

1. That the waters of the Welland River should, in the first instance, be conducted to a forebay immediately north of the Table Rock House, and used under the high head obtained by placing the power house in the gorge of the river below the falls.

2. That the water for power purposes should enter the park in tunnels beneath the surface of the high bluff west of the gravel pit, instead of by an open channel.

3. That a higher level of somewhat greater width should be given to the waters of the hydraulic lock and forebay in the park than was at first proposed.

It was represented by the Ontario Power Company that these changes had been strongly recommended by their hydraulic experts after a scientific investigation

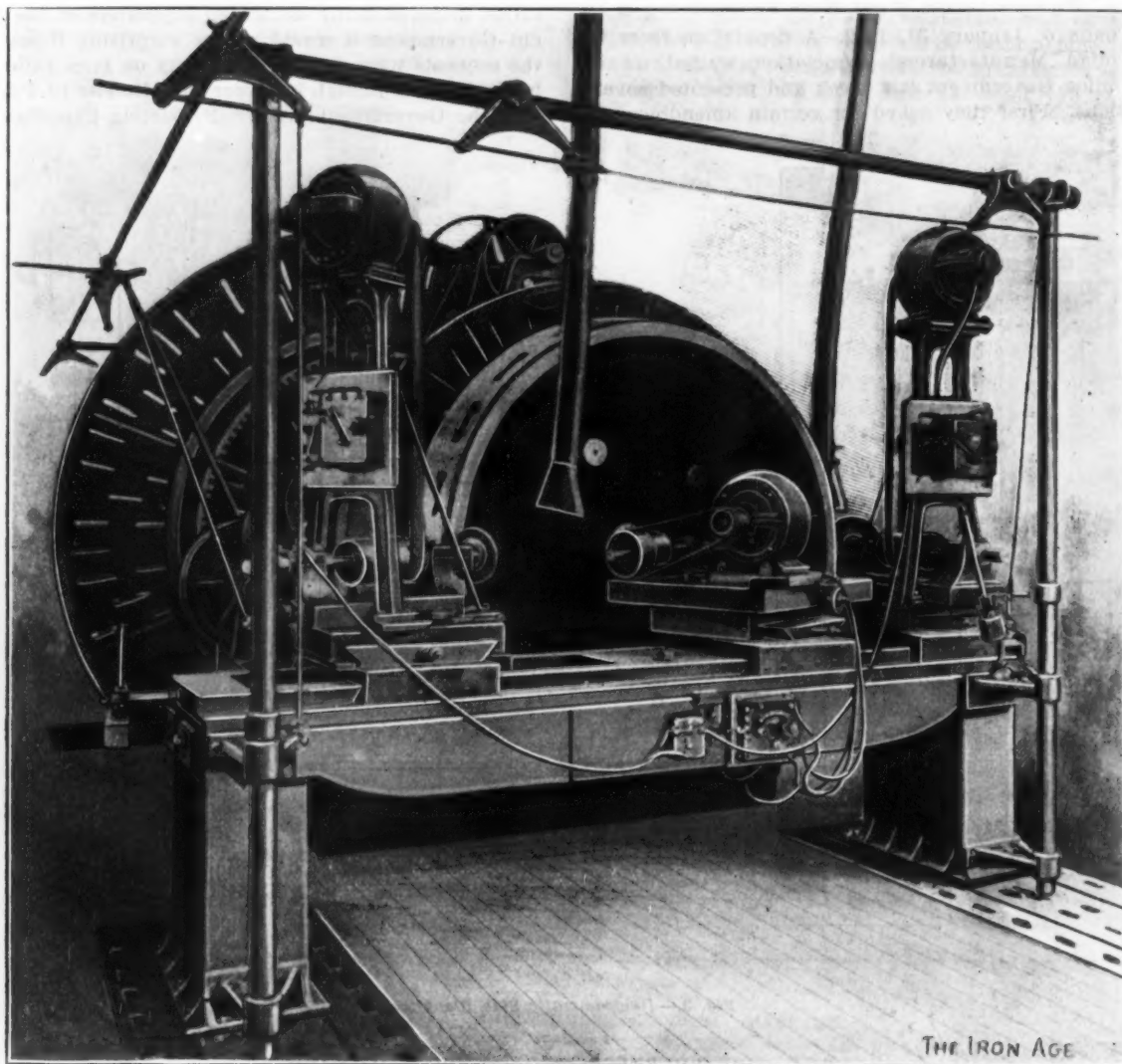


Fig. 4.—View of 8-Foot Face Plate.

THE HIBBARD REVERSIBLE GRINDING MACHINE.

and an outflow for at least 100,000 horse-power, and to have by the last named date 20,000 electrical horse-power actually ready for use, transmission and supply. The company deposit \$20,000 as security.

As the commissioners point out, the company have undertaken to make their initial development 50,000 horse-power—that is, double what they had contracted to furnish in the previous agreement. They add that the company have shown in a recent statement that they have already expended on work in the park, and have entered into contracts for works in progress, as well as for machinery and plants to be delivered, to the amount of \$1,750,000.

The commissioners quote the application of the Ontario Niagara Power Company to have their agreement amended in certain particulars, the chief features of which were:

of all the conditions governing the project. The commissioners had the proposals looked into and decided that they might be complied with.

"Up to the present time," proceeds the report, "the company have not commenced active operations, but the commissioners have the assurance of the president of the power company that the preliminary works are now sufficiently advanced to admit of an early start being made in the spring."

Many applications have been received for water power privileges, the commissioners say, some of which have been refused.

Last Year's Trade.

The report of the Department of Trade and Commerce covering the last fiscal year has just appeared. Commenting upon it, the Deputy Minister of Trade and

Commerce says that during the year there was a continuance of general prosperity so far as the aggregate trade of the Dominion is concerned.

"There have been," he says, "decreases in several instances, both as regards imports from and exports to different countries, as well as of various classes of goods, but all of minor importance, while on the other hand the increases have in several instances been large, with an aggregate over the previous year in imports of nearly \$1,000,000 in value and in exports of nearly \$5,000,000, the exact figures of aggregate trade showing an increase of \$5,385,921. Had the usual addition that has prevailed since confederation been made to the exports for goods short reported, the increase shown would have exceeded \$10,000,000. While the increase over the previous year has not been as large as in former instances, still there has been no backward movement and the progress made since 1895 has been most gratify-

ing if our manufacturers wish to take advantage of openings and are prepared to meet the requirements and tastes of foreign consumers. The necessity existing for strict fulfillment of orders, both as to the quality and style of goods and as to packing and shipping, cannot be too strongly impressed upon those desirous of doing an export business, and laxity on their part will prove disastrous. Consumers know what they want and will insist upon having it."

Canadian Pacific Railway Works.

The Dominion Government has consented to an increase of \$20,000,000 in the capital of the Canadian Pacific Railway Company, one condition being that the new stock must be sold at not less than par. Of the sum thus raised \$9,000,000 is to be expended for new rolling stock, \$6,000,000 for double tracking between

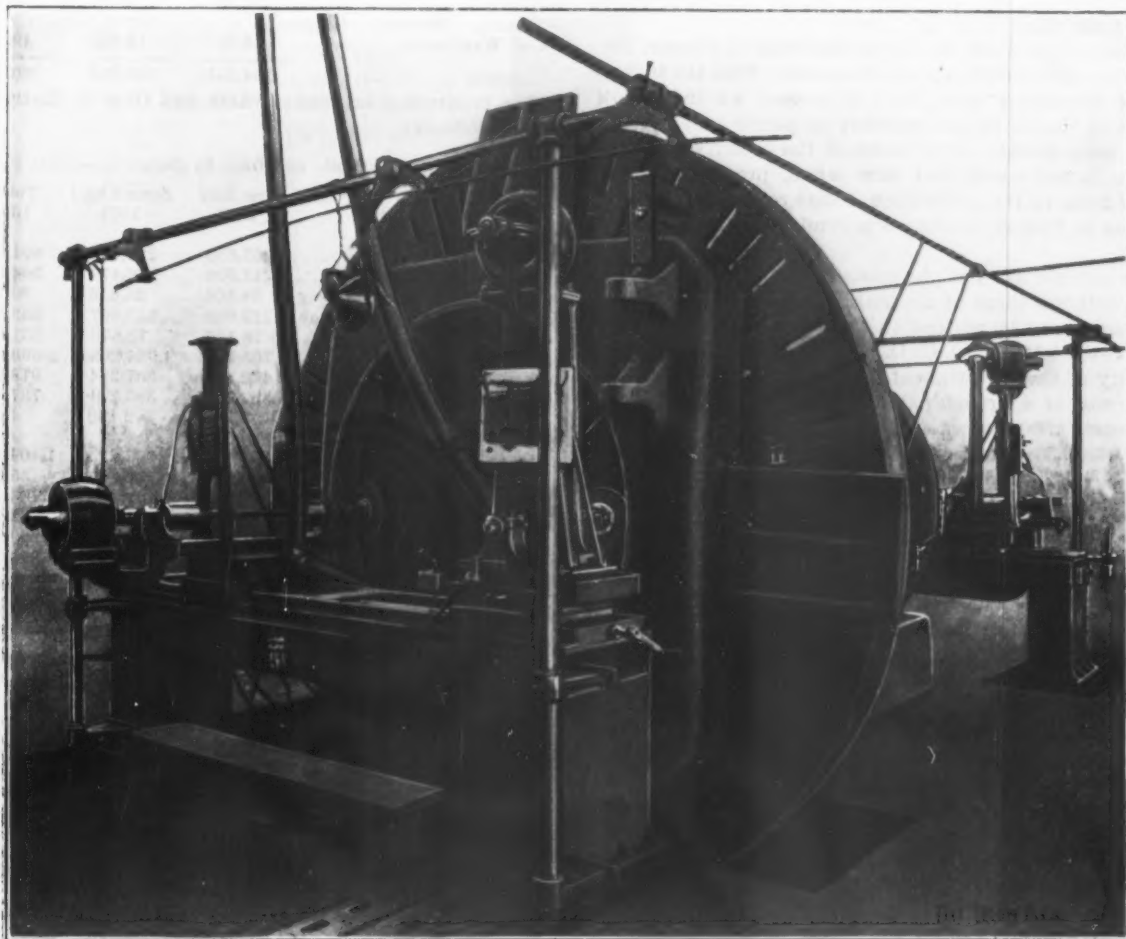


Fig. 5.—View of 14-Foot Face Plate.

THE HIBBARD REVERSIBLE GRINDING MACHINE.

ing. The figures of total trade for that year have been \$224,429,485, as against \$386,903,157 in 1901, an increase of, say, in round figures, about 72½ per cent. It will be noted that the imports from Great Britain fell off during the year about \$1,500,000, while those from the United States increased about \$5,000,000, all free goods. The exports to Great Britain were less by nearly \$2,500,000, home produce, while those to the United States show an increase of nearly \$16,000,000, nearly all also home produce. The aggregate trade with other countries shows in most cases small gains, though that with Belgium increased about \$2,000,000 and with France over \$1,000,000, while there was a falling off in the case of Germany of over \$1,500,000.

"A notable advance has been made during the past four or five years in the value of manufactures exported—say, from about \$9,500,000 in 1897 to over \$16,000,000 in 1901—and in this connection it may be stated that

Winnipeg and Fort William, \$1,500,000 for the building and equipping of a plant to construct rolling stock, \$3,000,000 for terminal improvements and \$500,000 for miscellaneous alterations.

Power has been granted to the Dominion Wire Mfg. Company to increase their capital from \$150,000 to \$1,000,000.

Application has been made to the Dominion Government by the Algoma Steel Company for power to engage in mining operations; also for a declaration that it is not subject to the Ontario Mining Companies Incorporation act or the Ontario Loan Companies act.

Thomas G. Love, Cement City, Mich., who has a large amount of iron ore along the line of the Kingston & Pembroke Railway, asks if the city of Kingston is willing to give another company the same terms as were offered to the Meyers and the Chicago promoters. The matter will be considered by the Kingston City Council.

A deputation of Guelph manufacturers waited on the Minister of Finance some days ago with a petition for a duty on cream separators.

Advices received at the Ontario Bureau of Mines foreshadow new copper works in the vicinity of Bruce Mines. A smelting plant of 800 tons capacity is promised. The chief promoter is said to be John Chase, who is credited with large experience in the copper producing regions of Lake Superior district.

Since January 1 Capt. A. E. Burke of Ishpeming, Mich., has been in charge of the Helen mine.

John F. Stairs of Halifax, president of the Nova Scotia Steel & Coal Company, says that the company contemplate the erection of a blast furnace somewhere near North Sydney.

C. A. C. J.

New French Patent Regulations.

Hilary S. Brunot, consul at St. Etienne, reports the follows regarding the new patent regulation in France, which took effect early this year:

In order that a patent may be obtained in France, the three following conditions are necessary: That the invention be absolutely new; that it possess an industrial character; that it be not contrary to public order or security, good morals, or the laws of the country. An invention is not considered new when, previous to the date of filing of the application, it has received sufficient publicity in France or abroad to render it easy of imitation.

The patents are not guaranteed by the Government, which delivers them at the risk and peril of the applicant; there may be noticed on thousands of patented inventions the letters, "S. G. D. G.," meaning "without the guaranty of the Government."

The cost of a French patent is 500 francs (\$96.50) for five years, 1000 francs (\$193) for ten years and 1500 francs (\$289.50) for 15 years. This tax is paid in annuities of 100 francs (\$19.30) in advance.

To obtain a patent, every inventor must file at the prefecture of his department:

"a. An application to the Minister of Commerce and Industry in which is mentioned the subject of his invention as well as the desired duration of the patent.

"b. A complete description of the invention, in duplicate.

"c. Drawings or specimens necessary to the understanding of the description, also in duplicate.

"d. A list of the papers thus filed."

The decree above alluded to concerns exclusively the drawings and descriptions of the inventions. The first article prescribes that the descriptions must be written with the pen in a clear hand, or printed, on paper 33 cm. long by 21 broad (12½ x 8 inches), leaving a margin of 4 cm. (1½ inches). One side of the paper only must be used, and no design is allowed in the text. The second article refers to the drawings.

For the first six months of 1902, the decree will not be applied in an absolute manner.

The courts of Lyons have recently rendered a decision interesting to patentees. By the law of 1844 the person who has obtained a patent must work his invention in France within two years after the date of patent or he will lose his rights.

The courts have decided that the working must be real, and that publicity due to the cession of the patent to another party is not sufficient.

The Industrial Department of the Chicago, Milwaukee & St. Paul Railway Company, Old Colony Building, Chicago, have issued a very complete map of the State of Wisconsin, which shows the location of the iron ore ranges in that State, the timber district, the localities favored with water power, the lead and zinc districts and the tobacco raising section. A great deal of interesting information is printed on the margin which, taken in connection with the map, presents much valuable material to those who desire to be informed concerning the natural resources and special features of this great State. The map is folded in a cover, making it convenient for handling and for filing.

Pig Iron Production in 1901.

In the last issue of *The Iron Age* we printed the leading figures of the report on the pig iron production in 1901, compiled by James M. Swank, of the American Iron and Steel Association. We present below some of the details, beginning with the production of charcoal pig iron, in gross tons:

Production of Charcoal Pig Iron.—Gross Tons.

	First half 1901.	Second half 1901.	Total 1901.
Massachusetts	1,952	1,434	3,386
Connecticut	4,621	3,821	8,442
New York	4,400	18,205	22,605
Pennsylvania	2,265	2,496	4,761
Maryland and Virginia.....	2,787	2,309	5,096
Georgia	15,547	11,786	27,333
Alabama	25,008	28,002	53,010
Texas	1,820	953	2,773
Kentucky and Tennessee.....	1,215	1,702	2,917
Ohio	4,588	5,479	10,067
Michigan	93,981	76,781	170,762
Wisconsin, Missouri, Oregon and Washington.....	36,547	12,948	49,495
Totals	194,231	165,916	360,147

The production in Pennsylvania and Ohio by districts was as follows:

Production in Pennsylvania and Ohio by Districts.—Gross Tons.

Districts.	First half 1901.	Second half 1901.	Total 1901.
Pennsylvania:			
Lehigh Valley.....	265,685	225,589	491,274
Schuylkill Valley.....	247,592	256,477	504,069
Upper Susquehanna Valley.	54,606	25,636	80,242
Lower Susquehanna Valley.	329,980	323,497	653,477
Junata Valley.....	78,116	73,573	151,689
Allegheny County.....	1,705,748	1,984,263	3,690,011
Shenango Valley.....	472,591	507,284	979,875
Miscellaneous bituminous..	392,565	395,294	787,859
Charcoal	2,265	2,496	4,761
Ohio:			
Mahoning Valley.....	702,632	702,225	1,404,857
Hocking Valley.....	20,060	14,340	35,000
Lake counties.....	361,242	422,248	783,490
Miscellaneous bituminous..	382,484	411,226	793,710
Hanging Rock bituminous..	127,244	172,057	299,301
Hanging Rock charcoal....	4,588	5,479	10,067

The most striking increase, it will be observed, took place in Allegheny County, which, in 1900, made 3,118,761 tons of pig iron, and during the second half of 1901 produced at the rate of nearly 4,000,000 tons per year.

The production of Bessemer pig was as follows:

Production of Bessemer Pig Iron.—Gross Tons.

	First half 1901.	Second half 1901.	Total 1901.
New York and New Jersey...	12,253	16,239	28,492
Pennsylvania:			
Lehigh Valley.....	58,211	64,979	123,190
Schuylkill Valley.....	41,140	41,080	82,220
Upper Susquehanna Valley.	54,606	25,636	80,242
Lower Susquehanna Valley and Junata Valley.....	262,894	242,983	506,877
Allegheny County.....	1,360,338	1,537,028	2,897,366
Shenango Valley.....	360,374	356,441	716,815
Miscellaneous bituminous..	234,920	244,247	479,167
Maryland	154,082	143,067	297,149
West Virginia and North Carolina	74,630	91,967	166,597
Ohio:			
Mahoning Valley.....	495,708	575,340	1,071,048
Lake counties.....	340,001	409,056	749,057
Hanging Rock bituminous.	25,687	57,589	83,276
Miscellaneous bituminous..	369,151	364,559	733,710
Illinois	650,614	743,816	1,394,430
Michigan, Wisconsin and Minnesota	25,569	14,372	39,941
Missouri and Colorado.....	62,009	85,207	147,216
Totals, 1901.....	4,582,187	5,014,606	9,596,793
Totals, 1900.....	4,461,391	3,482,061	7,943,452

The production of basic pig was as follows:

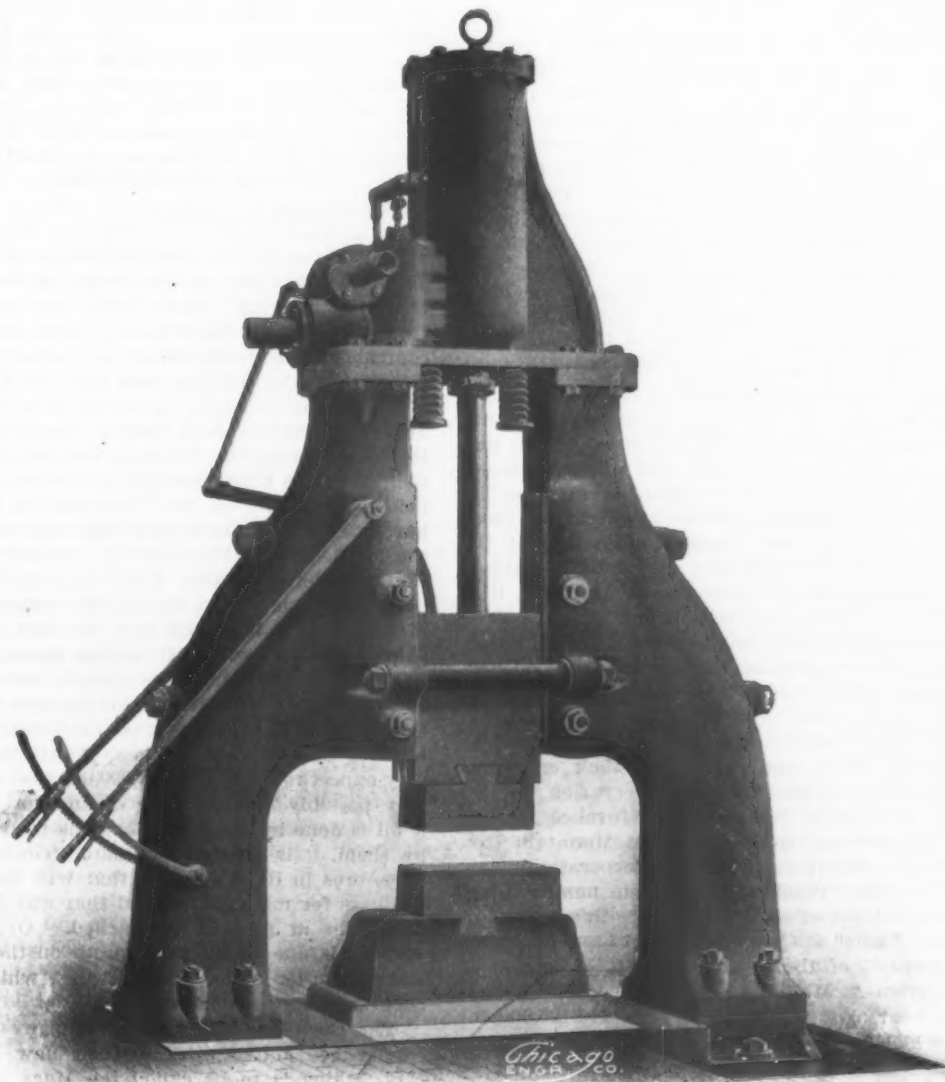
Production of Basic Pig Iron.—Gross Tons.

	First half 1901.	Second half 1901.	Total 1901.
New York and New Jersey...	6,235	28,085	34,320
Pennsylvania:			
Allegheny County.....	237,593	330,923	568,516
Other counties.....	198,471	244,273	442,744
Virginia and Alabama.....	134,598	166,846	301,444
Ohio and Missouri.....	68,208	33,618	101,826
Totals, 1901.....	645,105	803,745	1,448,850
Totals, 1900.....	581,868	490,508	1,072,376

A New Double Frame Steam Hammer.

The new 3000-pound double frame steam hammer built by the American Engineering Works of Chicago is automatic, double acting and may be readily operated by hand. The cylinder is cast from close grained gray iron and is provided with a balanced piston valve. The exhaust ports are so arranged as to keep the cylinder always drained. The throttle valve is under control of the operator, and the steam valve is operated by a cam running on a beveled path formed on the back of the ram. The position of this cam is governed by a hand lever in the usual manner. The piston rod is a steel forging, forged solid with the piston head. The frames are of a strong and substantial design, provided with ad-

turn of January 30 rolled 267 gross tons of No. 5 rods, which exceeds any previous 12-hour record. The best previous record for 12 hours was made by the same mill, and was 253 tons. The day and night turn on the same day rolled 498 tons of No. 5 rods, which is the best 24-hour record. Both rod mills of the Joliet works produced 470 tons in the day turn of January 30 and 878 tons in both day and night turn. These figures show a remarkable increase in output. Taken in connection with the records of output recently published, the fact is demonstrated that the No. 2 mill is not making high records spasmodically, but in a regular way and under usual conditions. The converting department of the Joliet works produced, in the month of January, 54,110 tons of Bessemer steel ingots against its best previous



A NEW DOUBLE FRAME STEAM HAMMER.

justable V guides for the ram, each guide being held to the frame by well anchored bolts. The frames are made of either cast iron or cast steel as desired. The base is a heavy casting to which the frames are fastened. The ram is of solid steel, having cam paths made integral with it and V grooves to match the guides in the frames. The upper and lower dies are steel castings held in place with dovetails and wedges. The lower one is made several inches longer than the upper to provide a place for resting work on one end. A pump is provided for supplying oil to the valves and cylinder. The company have increased their plant for the manufacture of hammers of this pattern.

Another Wire Rod Record.—The No. 2 mill of the Joliet works of the Illinois Steel Company on the day

month's record of 52,205 tons. The average per turn for January was 1002 tons. The billet mill in January rolled 48,667 tons against its best previous month's record of 46,410 tons.

McKenna Brothers Brass Company, Limited.—The McKenna Brothers Brass Company, Limited, of Pittsburgh, manufacturers of brass goods and saloon supplies, have decided to give 10 per cent. of the net profits of the concern to employees remaining on the pay roll at the end of the year. The division is to be made on the basis of wages earned by each. If the plan proves successful it will be continued. The men affected are, as a rule, skilled workmen and their salaries range from \$18 to \$25 per week. The net profits to be divided among the men will come from the manufacturing part

of the plant. The McKenna Brothers Brass Company, Limited, are now occupying their new building, First avenue and Ross street, Pittsburgh, which gives the concern very much larger facilities for carrying on their business.

Lake Mining Matters.

Hill's Operations on the Mesaba Range.

DULUTH, MINN., February 1, 1902.—The number of mines to be opened in the lake region for shipment the coming season is increasing, and if it were not for the fact that output at some of the great properties of several ranges was likely to be diminished it would appear that an enormous addition to the production of preceding years was to result. On the Mesaba range Jones & Laughlins, Limited, have let contracts for the sinking of a working shaft on their Grant Mine, in section 20 T 58 R 19, and expect an output there the present year of 50,000 tons. This mine lies adjoining the Sharon of the steel company of that name, and is a large body of excellent ore. It is a State lease, with a royalty of 25 cents per ton on an exceedingly small minimum. Two small ore bodies, in section 32 T 58 R 20, both belonging under lease to the Eastern Railway of Minnesota, are to be opened and will make shipment, and it is possible that other shipments will be from still other properties that have never had a shaft sunk into them, and are not even yet under actual development. On the Menominee range the same is true, and several mines that have not yet been shippers will add to the output of 1902.

While allotments for the coming season have not yet been made, it is understood that some of the biggest properties, like Fayal, Chapin and others, will not equal the production of 1901. It would seem to be the part of wisdom to conserve, as far as might be, these giltedge ores and use with them a proportion of the leaner and less desirable ores that will probably have to come into more prominence later on. And this, it is quite probable, is the idea of the biggest shippers. The most desirable ores of the Mesaba range, in the possession of the Steel Corporation in mines so far opened, are the Genoa, Fayal, Spruce and Auburn, and tremendous drafts were made on these mines last season. Their Clark and Chisholm are not large deposits, the Clark especially being quite thin, and their enormous Hibbing deposits, though chemically very rich, are regarded with somewhat less favor by furnace men at present. Neither are the Virginia and Mountain Iron group held in such favor. The Steel Corporation's new property adjoining Pillsbury has been named Glen, and will be a shipper of some importance this year.

Pickands, Mather & Co. of Cleveland have an option on the western $\frac{1}{2}$ of the southwestern $\frac{1}{4}$ of section 32 T 58 R 20, from A. Maitland of Negaunee, who bought the lease a year ago. The present price is \$125,000 for the lease, which latter is on the basis of 25 cents a ton. Mr. Maitland has completed a small shaft running 50 feet into the ore to give an opportunity to test physical structure, and it is very probable that the option holders will take the property. There is one hole on this land noted as the deepest hole in ore on the Mesaba range, 460 feet below surface. There is about 50 feet of surface on the ore here. It is considered probable that the new Buffalo Steel Company are interested in this purchase. The advance in value of the grade of ore found here is well shown by the increase in the price Mr. Maitland receives over what he paid a year ago, which is nearly \$100,000. No work has been done on the land in the time, but neighboring developments have been such as to indicate the possibility of a considerable increase in its ore deposit.

J. J. Hill on the Mesaba Range.

Perhaps the most interesting development of the past year on the Mesaba range has been the struggle of the Eastern Railway of Minnesota, a J. J. Hill organization, to assure itself of a permanency for its ore traffic.

With the formation of the United States Steel Corporation, Mr. Hill saw that his investments in ore roads and terminals, as well as the exceedingly remunerative

ore traffic itself, were menaced for the reason that the two roads controlled by the corporation would be likely to handle at least all of their business and to take from his road traffic from mines that were the property of concerns becoming constituents of the combination. So he at once set about taking lands on the range, buying fees and options on leases of every character. This policy has been continued, and is still vigorously pursued. The road has bought a great many tracts supposed to contain ore, has explored and bought many more and has taken leases right and left. It has secured the capital stocks of companies owning well located lands, and in every possible way has fortified its position. Once these lands are secured in fee the road withdraws them from exploration or purchase by mining corporations, except in cases where these companies have lands of their own on which ore is known to exist, and the traffic arising from which can be turned over to the Eastern Railway in return for the privilege of lease of some of its own properties. In other words, the road is rapidly putting itself in a position where it can control the ore situation, so far as newcomers in the mining and steel business are concerned. The great importance of its position can therefore be readily seen. By its original purchase of the Wright & Davis interests the road secured not only the Mahoning and Stevenson mines, but an immense area of well located lands on the western part of the range. It was content with this till a year ago. Since then it has secured contracts from the State on thousands of acres, has taken private contracts on thousands more, has bought the entire capital stock of the Wabicon and other land companies and is now busily engaged in exploring in many localities. Just now it is especially busy in the central part of T 58 R 19, and in section 15 alone has half the area of the section. Here it has found excellent ore, both above and below taconite. In the same section it has recently purchased the fee to a tract that had been explored by the La Belle Iron Works of Steubenville, and on which the latter have a lease. This township 58-19, which has been least explored of any of the central portion of the Mesaba range, is dotted with Eastern Railway ownerships. The ore bearing formation across township 57-21 is almost entirely under its control, and much the same can be said of T 56 R 22. All the ores to be mined by Corrigan, McKinney & Co. on the Mesaba range will be handled by this road. It is said that the Eastern Railway expect to move about 3,000,000 tons this year, which may possibly be something of an overestimate, though if all is done by concerns along the road that is claimed by them, it is an underestimate. The road has, moreover, ores in its possession that will insure it a heavy business for many years, and that will draw to it many properties at present unattached. Of course all this activity is due to the great profit on the haul of ore to Lake Superior under present rates, which Mr. Hill expects will be permanent.

The Cleveland Cliffs Iron Company have this week commenced active work in their new Negaunee property, which is to be called the Maas, in honor of the man whose skill and persistence opened the deposit at a very considerable depth. Until now the 500 acres to be opened as a mine were utilized for raising potatoes and cabbage, and in the early days of the Marquette range the land was part of the holdings of the Pioneer Iron Company, who later sold it out to farmers without reserving the mineral rights, a slip that was not repeated in their later sales. The Negaunee Mine was afterward found $\frac{1}{2}$ mile away, and the Regent group was opened. Mr. Maas succeeded two years ago in getting options on the land, and at once sunk drill holes with much difficulty. He gave an option to the Cleveland Cliffs Company, who put five drills on and sunk 16 holes, proving Mr. Maas' find, and locating a far larger ore body. Work was started on the working shaft on Saturday of this week, after a year of preparation on the part of the Cleveland Cliffs Company. It will be in the foot wall, and will reach the solid ledge in 170 feet from surface. Much of this surface will be quicksand, and as there is reason to expect a great flow of water, six large pumps are on the ground. The shaft will be three-compartment and vertical, carrying two skips and a cage. By

another year this will probably be a large and important producer of high grade ore.

The explorations of the Clergue syndicate in the Republic district, on lands selected years ago by Prof. R. Pumpelly for iron, but neglected till now, are encouraging, in that they are showing the formation hoped for. No ore has been cut, and none has been expected, though the drill is down more than 1500 feet. The expectations of Professor Pumpelly and associates that the hanging wall would flatten at depth are proving correct, and the ore is supposed to lie, if at all, in a fold of the diorite under a quartzite capping. They are now working through the capping.

Efforts are being made by the mining officials of the United States Steel Corporation toward lessening the number of grades of ore made at the numerous mines of the combination. These grades have increased and multiplied under constituent companies until they are quite burdensome, and can probably be materially reduced in number, now that the constituents are under one management.

D. E. W.

Australian Tin and Tin Mining.

BY JOHN PLUMMER, SYDNEY.

Tin deposits are scattered widely throughout Australia, there being over a hundred and twenty recognized stanniferous localities in New South Wales alone; but comparatively few are worked to any considerable extent, limited water supply and absence of cheap and speedy means of communication with the coast forming at present—apart from fluctuations in market prices—the leading difficulties encountered. Although in the parent State the existence of tin was discovered as far back as 1851, it was not until over 20 years later that mining operations were commenced. In 1872, according to Professor David of Sydney University, tinstone was accidentally discovered while searching for gemstones near Inverell, in the northern part of the State. Mixed with a number of sapphires and other gems in the gravels of the creeks was a heavy black mineral, in water-worn grains, which, on assay, proved to be oxide of tin. The discovery becoming known, a Sydney company took up some ground in the vicinity, and then commenced a rush to what are now known as the New England tin fields. Strangely enough, the stream tin, as the black mineral is called, had long been familiar, under the name of "black sand," to alluvial gold miners in the district, where its weight, rendering it difficult of removal from the sluice boxes, had caused it to be regarded as worse than a nuisance. In some places the stockmen, ignorant of the real character of the sand, used it for cleaning their bits. Native tin has been found in the State, but, as in other parts of the world, it is of rare occurrence. The same may be said of stannite, or tin pyrites, although it is plentiful, with galena, zincblende and arsenical pyrites, in the Boran Creek Silver Lode, near Inverell. The common ore of tin is the oxide, otherwise known as cassiterite or tinstone, found in New South Wales in several forms and of various colors. At Vegetable Creek, the leading tin field in the State, between 1872 and 1885, 15,000 tons of cassiterite are said to have been extracted from a shallow alluvial deposit within a distance of a little over 5 miles from its source, downward. The total area of ground worked was about 150 acres, which produced 15,000 tons of stream tin, or at the average rate of 100 tons per acre, or half a hundredweight of cassiterite per cubic yard, allowing the mean depth of the wash dirt to be 2 feet 6 inches. The depth of stripping (overlying soil) varied from 6 inches to 9 feet. At Catarrh Creek about 1000 tons of stream tin were obtained from the shallow alluvials within a distance of about 1 mile. The width of the deposit varied from three to seven chains, and the depth of sinking to the granite bed rock was from 10 to 14 feet. The Vegetable Creek workings are situated in what, during early tertiary times, formed the main drainage channel of this part of the State. In portions of its course there were two distinct flows of lava, an older and a newer, each covering a bed of stanniferous wash dirt. Up to 1886 the produce of these latter was 6000 tons of stream tin in a distance of 2 miles 30 chains.

At one place an area of $5\frac{1}{2}$ acres of gravel, having an average thickness of 3 feet, yielded 2000 tons of tin ore. In the far western portion of the State, at Euriowie and Poolamacca, about 50 miles to the north of Broken Hill, tin ore occurs under conditions differing materially from those of the other New South Wales tin fields, the ore bearing a marked resemblance to that from the Horney Peak mines of Dakota, in the United States, and to such an extent that specimens from the two places cannot be readily distinguished from each other. A considerable area of ground was pegged out for mining purposes when these deposits were first discovered, but probably not more than 100 tons of dressed ore were dispatched from the field before it was abandoned. The scarcity of water for the necessary concentration processes, and the distance (several hundred miles) which separates the district, which is rich in minerals, from the seaboard, are the chief reasons which led to the cessation of mining operations, which are certain to be resumed when conditions are more favorable. It is, however, as pointed out by E. F. Pittman, in his work on "The Mineral Resources of New South Wales," in the northern portion of the State that the principal stanniferous deposits occur. From near Tamworth tin bearing rocks extend northward, with some intermission, up to the Queensland border. The mean width of this area is about 30 miles, and within it are the leading New South Wales tin fields. The largest export of tin raised in the State was 9125 tons, value £824,552 in 1883; and the greatest value £833,461 (for 8670 tons), in the previous year. The quantity exported in 1900 was 916 tons 7 hundredweight, value £120,932, making the total quantity exported since the opening of the New South Wales tin fields, in 1872, 135,078 tons, value £10,849,238. This does not include the produce of other States.

The Biersach Fire Proof Window.—Biersach & Niedermeyer, Milwaukee, Wis., are manufacturing a fire proof window under a patent recently granted to Louis D. Biersach. This fire proof window covers a special construction of the window frame and the sashes. The window frame is so designed that portions of it may be readily removed for the purpose of reaching the sash balance weights and cords. The frame is further so constructed that the sashes are held and guided when raised or lowered by non-corrosive flanges and grooves. In the third place, a special arrangement is employed for forming a tight joint at the upper and lower edges of the sashes. The removable plate arranged for the purpose of reaching the weights and cords is formed with two recesses or grooves which receive sheet brass or other non-corrosive guiding flanges, which are so folded that the outer edge presents a smooth rounded surface upon which the bearings of the sash can slide. Grooves on the sash are arranged to correspond with these flanges, and are provided with a brass or similar non-corrosive bearing surface or lining. Guiding flanges of fire proof sashes and window frames have heretofore usually been formed of one continuous piece with the galvanized sash and frame, and the parts thus constructed are liable to rust and break, especially owing to the fact that when galvanized iron is bent at the sharp angles necessary to form beads and grooves the galvanized surface peels off and the metal is soon destroyed by rust. The close joints at the upper and lower edges of the window sash are secured by the construction of similar sheet brass flanges which enter corresponding grooves. Special means have also been devised for holding the glass in the metal sashes and for easily slipping the glass into place.

For some years past it has been the custom at this time of the year for coke operators to readjust the wage scale of their employees. Last year and the year before, after the adjustment had been made, the pay of the men was increased. Several months ago a number of independent operators proposed a reduction of wages. This was not sanctioned by the large interests and the matter was dropped. For the coming year, according to present outlook, no change in the pay of the miners and coke workers will be made and they will continue to receive the same pay they are receiving now.

The Cambria Steel Company's New Works.

Fragmentary information has been published at intervals in the past year relative to important improvements undertaken by the Cambria Steel Company at Johnstown, Pa. It was understood that among these improvements was the construction of a large open hearth steel plant with various finishing departments. For the purpose of ascertaining the extent and character of the new plant a representative of *The Iron Age* recently visited Johnstown. Through the courtesy of the management the opportunity was afforded to secure the data for the description of the works herewith presented.

The Character of the New Works.

The location of the new plant is near Franklin, on the left bank of the Conemaugh River, a short distance east of Johnstown. It was necessary for the company to utilize a site at some distance from their Cambria and Gautier works, in order to provide a sufficiently large tract of land on which to make these improvements, as

wire rope tramway about 3350 feet long. This tramway extends not only over the river, but over the tops of the buildings of the steel works, terminating at the washer plant for the coke ovens. The capacity of the tramway is 80 tons an hour. The coke produced in these ovens is at present being used in the blast furnaces of the company now in operation at the main Cambria works in the western part of the city of Johnstown. When the proposed blast furnaces are erected at the new plant the coke will be used there. The ground plan of the works, which is shown herewith, provides a sufficient space for three blast furnaces between the coke ovens and the steel works. This arrangement will enable fuel to be handled conveniently from the coke ovens to the blast furnaces while the hot metal from the furnaces can then be easily conveyed to the steel plant.

The Open Hearth Steel Plant.

The buildings which have thus far been erected are of a most substantial character. Steel construction has been employed throughout. Numerous runways have been provided for electric traveling cranes, both in the buildings and over the yards. The visitor cannot fail to

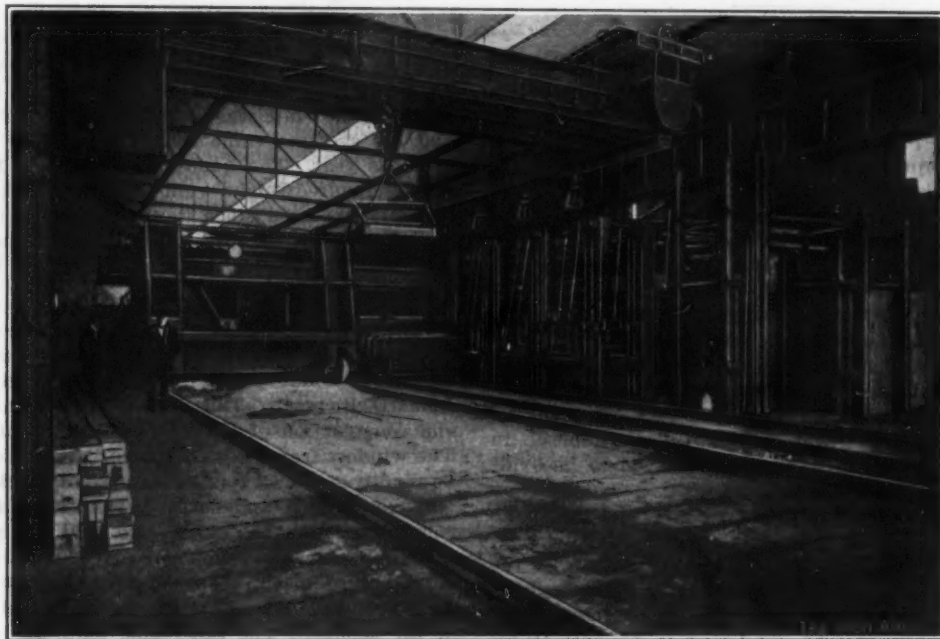


Fig. 1.—Charging Floor of Steel Works.

THE CAMBRIA STEEL COMPANY'S NEW WORKS.

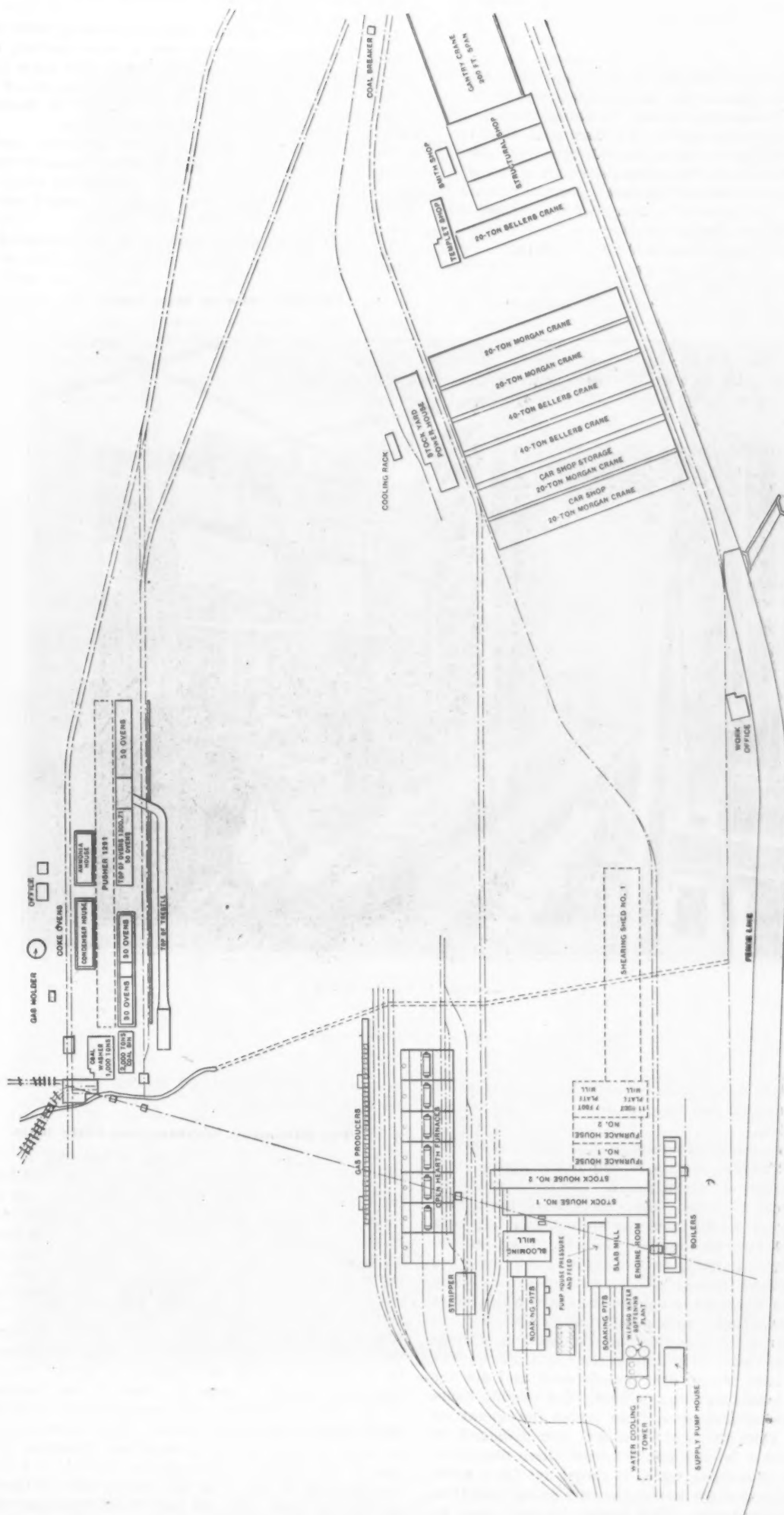
the works mentioned have been so enlarged from time to time as to cover all the ground available in their vicinity. This Franklin tract comprises about 160 acres. The arrangements contemplated will cover a completely independent plant, consisting of Otto Hoffman by-product coke ovens, blast furnaces, open hearth steel works, blooming mill, slabbing mill, two mills for rolling sheared plates, a universal plate mill, a continuous bar mill, a structural department and steel car works.

The plant, as far as completed at the present time, comprises the coke ovens, steel works, blooming mill, slabbing mill, structural department and car works. The location is shown on the accompanying ground plan. The sheared plate mills are under contract and work is proceeding on them, but the blast furnaces, universal plate mill and continuous bar mill will be taken up in the future.

The development of this plant began with the location of the by-product coke ovens in 1895. They were placed on the hill side, leaving a vast open space between them and the river for the other departments of the works. The coke plant comprises 160 Otto-Hoffman ovens, which are now in full operation, running on coal mined in the immediate vicinity. The mines are located on both sides of the river. The arrangement for hauling the coal from the mines on the opposite side of the river consists of a

be impressed by the large number of such cranes which have been installed. In addition to the cranes on runways a number of locomotive cranes, built by the Industrial Works, Bay City, Mich., are in service on the tracks running through the yards. The equipment is at present considerably in excess of the requirements, being purposely made so to meet the necessities of additional construction and increasing production.

The stock yard lying between the steel works and the proposed site for the blast furnaces is equipped with two 10-ton electric cranes of 80 foot span. These cranes cover five standard gauge tracks. The stock yard is on a level with the charging floor of the steel plant. The charging floor, shown in Fig. 1, is equipped with two Wellman-Seaver electric charging machines, each capable of charging 50 tons in 15 to 20 minutes. One machine is used at present, the other being in reserve, ready for instant use in case of a breakdown, and also being provided in view of the extension of the plant. A large electric traveling crane is located on a runway over all the furnaces to facilitate the handling of any heavy parts in repairs or construction. A special feature of the arrangement of this plant is that the standard gauge system of tracks is used for the charging cars as well as all other cars. This makes all parts of the plant accessible and the delivery of material much more economical by permitting cars



GENERAL PLAN OF NEW WORKS OF CAMBRIA STEEL COMPANY.

loaded with brick and other material to be moved directly in front of a furnace for repairs as well as to other locations wherever the material may be required.

The open hearth steel plant at present comprises seven 50-ton furnaces of the standard stationary type. These furnaces consist of six basic and one acid furnace. They are all contained in one long building, which is 125 feet wide by 525 feet in length. The arrangement of this building is such that it can be indefinitely lengthened, so that other furnaces can be added as required, and it is probable that in the course of time the plant may number 20 furnaces, if not more. The first steel was turned out by this plant in June, 1901.

The arrangement of this building is such that access is easily obtained to the casting floor through several openings left on the side for the entrance of car tracks. In this way the ingots can be easily taken from the

be done by moving the great traveling crane from which the ladle is suspended.

In immediate connection with the casting house is a testing laboratory, equipped with a small heating furnace and train of rolls. In these rolls a test ingot from every casting is quickly rolled into a $\frac{3}{4}$ -inch round for the purpose of being mechanically tested. A chemical determination is also made at the same time.

The stripping house, located at the end of the casting house, is fitted with one of Henry Aiken's electric traveling cranes, having a hydraulic cylinder to strip the molds from the ingots. The pump is carried on the crane.

The steel works are operated with gas furnished by a producer gas plant, shown on the ground plan of the works. This plant contains 36 producers, of which 18 are the standard Taylor producer, having the usual bell

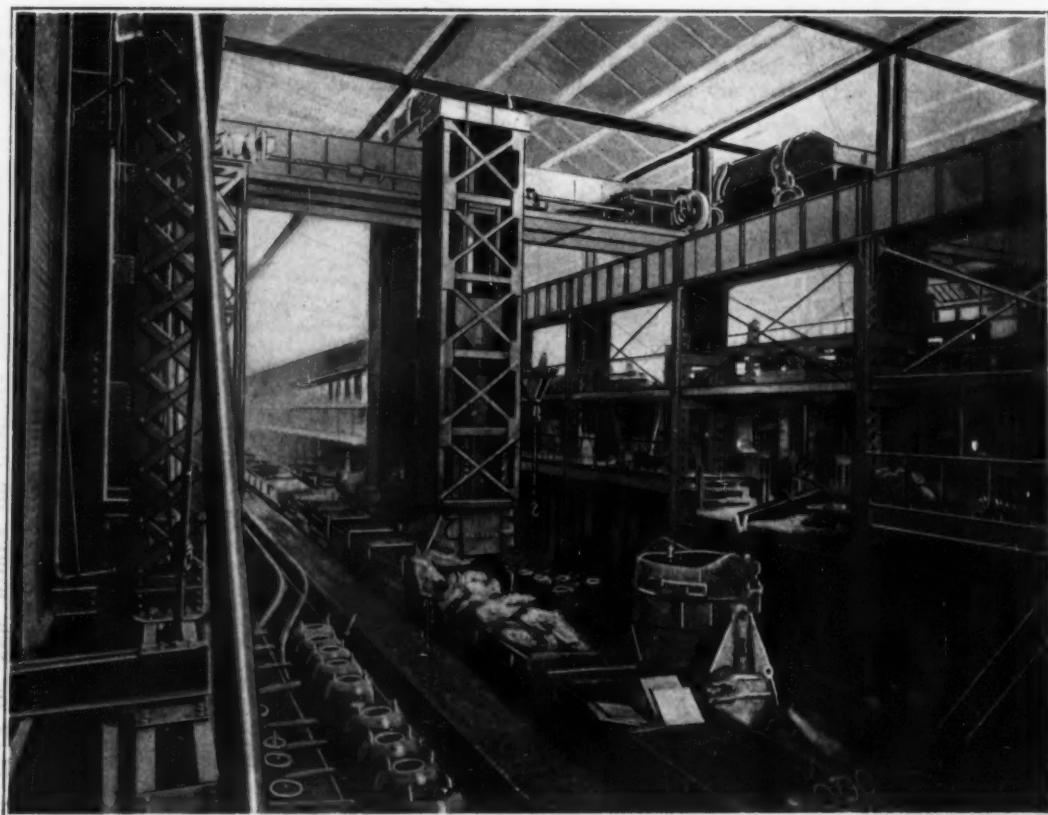


Fig. 2.—Sellers 90-Ton Ladle Crane.

THE CAMBRIA STEEL COMPANY'S NEW WORKS.

casting floor or material for repairs can be brought in without compelling the cars to be run the full length of the building.

The casting house is equipped with two Sellers 90-ton electric traveling cranes to handle the ladles. One of these cranes is shown in Fig. 2. The ladles are large enough to hold 75 tons. The cranes have been built with a view to make them more than equal to any service which may be required of them. They are unusually heavy, all their parts liberally exceeding the usual calculations for safety. These cranes are equipped with wire ropes instead of chains, from which the ladles are suspended. Ropes were adopted as providing greater safety than chains, as warning of weakness or wear is shown more quickly in a rope than in a chain. The ingots cast here weigh 7000 pounds each and are top poured into molds standing on cars. The casting house has two pouring platforms, from which the operations of pouring, shifting ingot cars, &c., are managed. A hydraulic mover is manipulated from these platforms, and consists of an arm which is thrust out from under the platform and easily moves the cars as the operation of pouring is conducted. This brings the mold more accurately under the tapping hole of the ladle than could

feed, while 18 are modified Taylor producers, having the Bildt continuous feed.

The Blooming, Slabbing and Plate Mills.

The blooming mill, occupying a building 75 to 125 feet wide and 300 feet long, is equipped with six heating furnaces or soaking pits, having a capacity of ten ingots each, or 60 in all. These furnaces are provided with a Sellers 10-ton electric charging crane, the arrangement being shown in Fig. 3. This crane not only charges the ingots into the furnace, but also handles the ingots from the furnaces to the buggy or cradle, which tips the ingots on the tables leading to the rolls. The mill has a 40-inch reversing train, built by Mackintosh, Hemphill & Co. of Pittsburgh, shown in Fig. 4. This mill is operated by a double 50 x 60 inch engine, a special feature of which is that it is connected direct to the bottom rail of the train by spindles and coupling boxes without the usual intervening pinion wheels. This engine is claimed to have the heaviest bed plate of any blooming mill engine in this country. The rolls are of steel. A hydraulic manipulator is placed on the rolling side of the train, and on the other side are two Wood hydraulic shears, one of which shears the ends from the blooms and the

other shears the blooms into billets. This mill will roll all sizes from 14 inches square to 4 inches square, and has a daily capacity of 1000 to 1200 tons. At present the

labor. The billets as sheared slide down an incline into a steel box on a car placed on a track at a lower level. This car can then be taken to other points on the

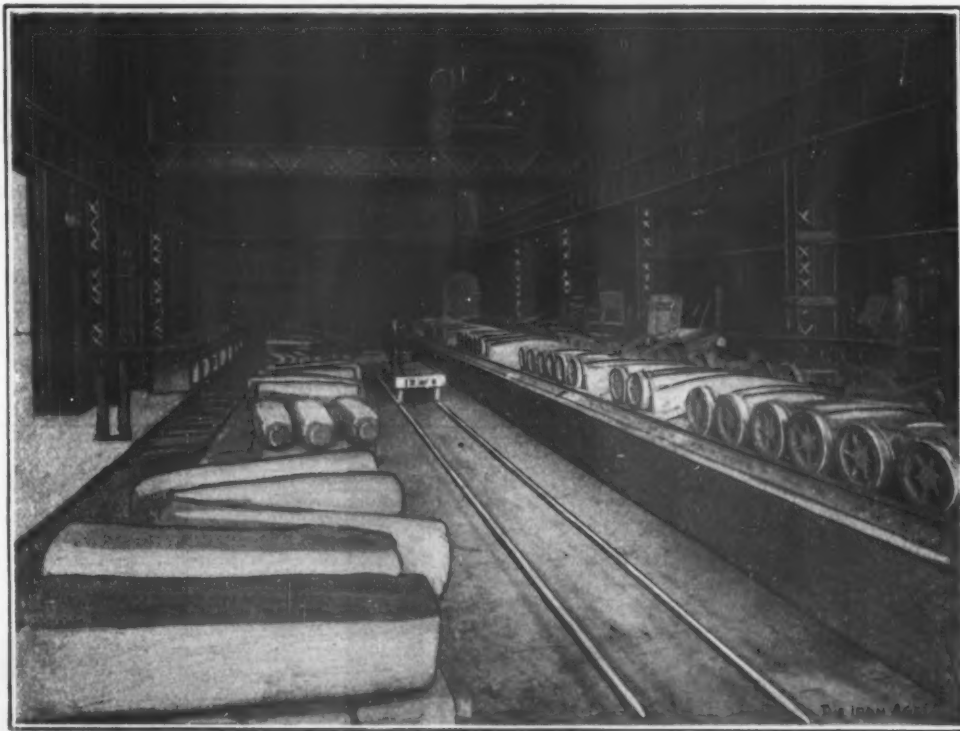


Fig. 3.—Soaking Pits in Blooming Mill.



Fig. 4.—Blooming Mill, with Engines on the Right.

THE HIBBARD REVERSING GRINDING MACHINE.

product of this mill is sheared into billets of such sizes as may be needed, which are then shipped to the other works of the company for finishing. The arrangement for handling the sheared billets dispenses with much

grounds, or the box can be lifted from the car by an overhead traveling crane and the contents emptied into a car on an adjoining track. Ultimately it is expected that a continuous bar mill will be placed at the billet

end of this mill, and billets can then be rolled directly into bars without reheating. The blooming mill building is completely covered by a 60-ton electric traveling crane.

The stock house, running along the end of the blooming and slabbing mills, is equipped with a 40 and a 10 ton electric traveling crane. These cranes are placed on a 60-foot runway, and are arranged for carrying the heaviest blooms, which are stored in this stock house for use as required. The plate mills are laid out on the opposite side of the stock house.

Adjoining the blooming mill is a slabbing mill, built by the Mesta Machine Company of Pittsburgh, occupying a building 75 to 150 feet wide by 350 feet long. This is a 34-inch mill, having two vertical and two horizontal rolls. The mill is wholly built of steel castings, with cut gears. The tables are driven by an outside line shaft, having pinions which are coupled up with the main shaft by spur gears. The tables are motor driven.

boilers carrying 150 pounds pressure. These boilers are supplied with Murphy automatic stokers. The coal is conveyed by the Heyl & Patterson lifting and conveying apparatus shown in Fig. 5. Storage for 700 tons is arranged in overhead bins. The ashes are handled with an ash scoop and are run out underneath.

Foundations are now in for the first plate mill, which is expected to be ready for operation early in the spring. It will have a building 200 feet in extreme width and probably 700 feet in length. This mill is being built by the Morgan Engineering Company of Alliance, Ohio, and will have 134-inch rolls for wide plate. Plans have been made for an 84-inch mill for rolling narrower plate, which will follow in due course.

The Structural Department.

The structural shop, located on these grounds, has been in existence for three years, having considerably preceded the breaking of ground for the steel works.

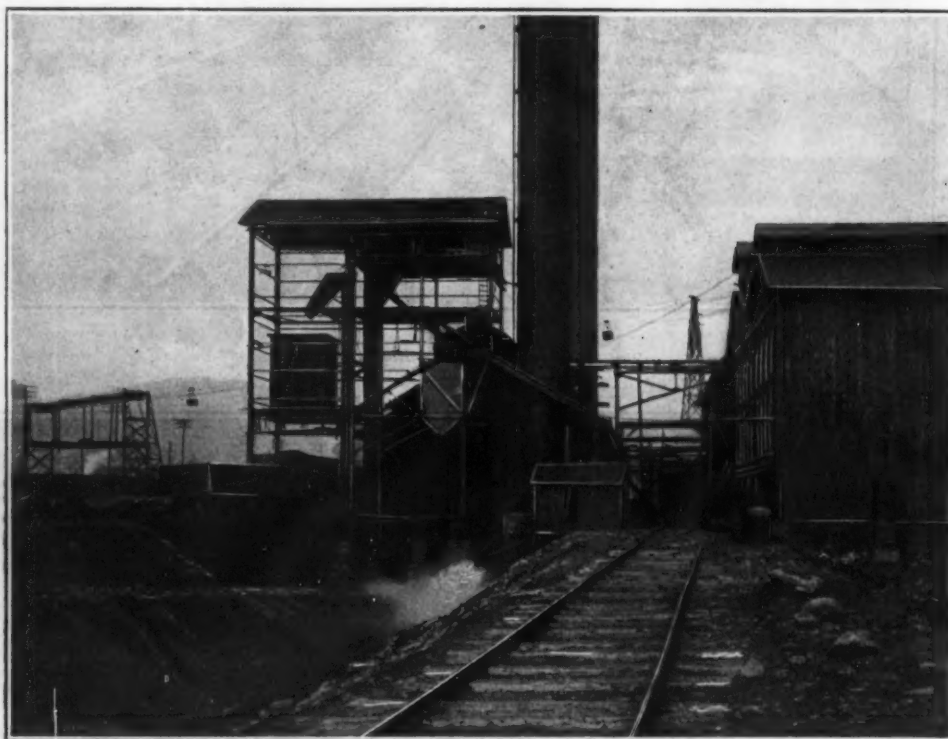


Fig. 5.—Coal Elevating and Conveying Plant.

THE CAMBRIA STEEL COMPANY'S NEW WORKS.

A Kennedy manipulator is placed under the tables, having vertical fingers and horizontal travel, for the purpose of handling the ingot. This building is equipped with two 50-ton electric traveling cranes, one being placed over the mill and one over the engines. The engines are tandem compound reversing condensing engines, the first of the kind in the country, and were built by the Southwark Foundry & Machine Company of Philadelphia. This mill is equipped with the same number of heating furnaces or soaking pits as the blooming mill. The heating furnaces of the blooming and slabbing mills are operated by 20 Taylor gas producers, which are all located in one house. This house will be extended, as required, for the purpose of running the furnaces of the plate mills and the continuous mill when constructed.

In the same building is the pumping plant, supplying the necessary pressure for the operation of the hydraulic apparatus. It is equipped with three double triple expansion pressure pumps and two double triple expansion boiler feed pumps, all having automatic regulators and all built by Henry R. Worthington of New York. All have Greene rollers, which feed the cylinders automatically.

The steam plant furnishing steam to these engines consists of six batteries, each of four Babcock & Wilcox

It occupies a building 225 feet square, well lighted from roof and sides and heated by a hot blast system. It is thoroughly equipped in every respect with large drills, punches, &c., all motor driven, and having six 10-ton electric cranes running the full width of the shop and arranged in alternate panels of the roof truss. In this shop structural work of all kinds is fabricated. All the buildings erected at this plant were constructed here last year. It has a capacity of 30,000 tons per annum.

The plate stock yard, immediately adjoining, is controlled by a 20-ton traveling crane, having a runway of 60 x 320 feet. The beam stock yard, also adjoining, is controlled by two 20-ton cranes and two 40-ton cranes, having three runways 76 x 508 feet and one runway 80 x 508 feet. In these yards the shearing is done on two hydraulic shears, capable of shearing any section of beams or channels from 3 inches to 24 inches in width. The loading of finished material is done under a 20-ton gantry crane, which covers a stock yard 200 x 300 feet.

The Steel Car Department.

In this vicinity a car shop for building steel cars is now being erected. The building will be 82 x 508 feet. It is expected that eventually three buildings of this size will be constructed, to be devoted to the manufac-

ture of steel cars. The building now under construction will have a capacity of 15 cars per day. It will be furnished with a thorough equipment of the tools necessary for the rapid and economical performance of all work required. All tools will be motor driven. The shop will be covered by a 20-ton crane, having two carriages of 10 tons, each running on a 76-foot stand. The car shop is adjacent to the plate and beam stock yards, and most of the material will be conveyed to the shop on roller runs. It will be equipped with an axle finishing plant, wheel pressing plant and a forging plant, occupying a building 30 x 76 feet.

At present the car building department occupies temporary quarters in a building adjacent to the blooming mill. Here two spaces have been taken for the purpose, one covering 40 x 160 feet and the other 60 x 160 feet. Notwithstanding the fact that the quarters are exceedingly cramped, and the punching and riveting machines are limited in number, this department has turned out

of the most modern description. It will embrace ten mills, with a capacity of from 35,000 to 40,000 boxes of tin plate per month. The plant will be reached by the Pittsburgh & Lake Erie and the Baltimore & Ohio railroads, and it is expected that the company will be ready to ship their products late in the coming summer. The stockholders of the concern are: E. P. Douglass, J. C. Smith, Dr. J. W. Fawcett, Dr. E. T. Nason, G. F. Meyer, R. T. Carothers, E. R. Crawford, J. E. Lauck and E. W. Pitts of McKeesport and William Curry of Pittsburgh. Mr. Crawford will be general manager and Mr. Lauck superintendent.

"Underwriting" Profits.

A good deal of figuring has been indulged in since the issue of the report of the United States Steel Corporation to get approximately at the profits which the Morgan syndicate must have realized for "underwriting" the

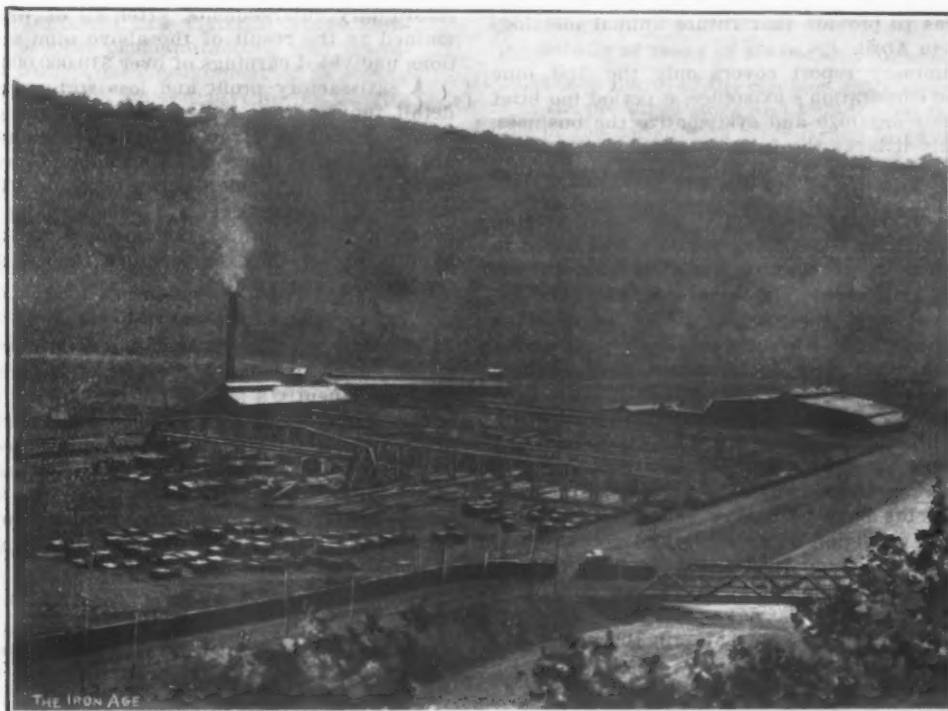


Fig. 6.—Structural Department and Gantry Crane.

THE CAMBRIA STEEL COMPANY'S NEW WORKS.

36 steel cars in one week. The cars made here are constructed of plates, beams, channels and angles, riveted together. The method of construction adopted has proved to be very satisfactory, the sample cars furnished to railroad companies having invariably resulted in the placing of orders. The first Cambria steel car was turned out last spring.

A view of this part of the plant, with the car shops in course of construction, is shown in Fig. 6.

The Electric Power House.

The power plant, furnishing electric power and compressed air to all portions of the new works, is located in its own group of buildings near the structural plant. It contains four 400-kw. Westinghouse 200-volt generators, each being direct connected with a compound condensing Southwark engine. The engine room further contains four air compressors capable of delivering 1500 cubic feet of air per minute; also an expansion pump of 500 pounds pressure for operating the shears in the beam yard. The boiler house contains four Babcock & Wilcox 300 horse-power boilers fitted with Murphy automatic stokers.

Work on the new tin plate plant of the McKeesport Mfg. Company, at Port Vue, near McKeesport, Pa., will shortly be started. The equipment of the plant will be

steel merger. The basis of these calculations is the fact as announced that the syndicate received 649,987 shares of preferred stock and 649,988 shares of common stock of the Corporation. The usual valuation taken is 90 for the preferred and 40 for the common stock, or say \$84,500,000, which is probably high. This high valuation is partially balanced by the fact that the syndicate received the dividends on such stock as it happened to hold at the time. The syndicate underwrote \$200,000,000, but only \$25,000,000 was paid in, no other calls having been made. The syndicate paid to the Corporation \$25,000,000 in cash, and it is estimated that the other expenses were \$3,000,000. This would bear a net profit of over \$56,500,000. The *Evening Post* says:

Against this net profit, accruing to the syndicate, J. P. Morgan & Co. are understood to make a charge of 20 per cent. for their services as managers of the syndicate, or \$11,300,000, leaving \$45,000,000 as the apparent divisible profit to the syndicate, and J. P. Morgan & Co. were, of course, the largest individual subscribers.

In Wall Street the profits of an underwriting syndicate are usually reckoned on the total sum for which the members are liable. Thus, the steel syndicate profits are, roughly, 22½ per cent. on the subscription of \$200,000,000. On the amount paid in the profit is 180 per cent. Probably J. P. Morgan & Co., assuming that they subscribed \$50,000,000 to the syndicate, made a profit of

\$25,000,000 on the Steel Trust underwriting. The bankers' syndicate which underwrote the steel issues will, in short, clear the largest profit ever made on an undertaking of that kind in this country.

The United States Steel Corporation.

Preliminary Report to the Stockholders.

The following preliminary report to the stockholders of the United States Steel Corporation has been issued, over the signatures of Charles M. Schwab, president, and Elbert H. Gary, chairman of the Executive Committee:

The business of the United States Steel Corporation for all practical purposes began April 1, 1901, from which date interest on the bonds and dividends on their preferred stock began to accrue. The Board of Directors has determined that the fiscal year, instead of running from April to April, shall correspond with the calendar year, and, in order to give sufficient time for preparation of annual reports to stockholders, the by-laws have been amended so as to provide that future annual meetings shall be held in April.

This preliminary report covers only the first nine months of the corporation's existence, a period too brief to satisfactorily organize and systematize the business, and necessarily it lacks the fulness and definiteness of information which it is hoped will characterize future annual reports.

But the management feels fully justified in stating that much that at the time of organization was hoped to be accomplished in the way of avoiding wasteful expenditures for unnecessary enlargement of plants by various prominent steel companies, and of establishing harmonious co-operation among them, has been successfully achieved. The several companies have effected many economies which have been attended with most satisfactory results, and the outlook for further improvement in this direction is most gratifying.

The business of the companies has been put on practically a cash basis. The losses actually incurred through bad debts have been very small, and little, if any, loss in the collection of accounts and notes receivable is anticipated. About 70 per cent. of the total current monthly accounts due from customers is now being generally collected within 30 days, and it is the effort of the several managements to maintain the businesses on a strictly cash basis.

The results of operations for the nine months are as follows:

Net Earnings.

Net Earnings of All Companies from Operations for Nine Months Ending December 31, 1901—viz.:

April	\$7,356,744
May	9,612,349
June	9,394,747
July	9,580,151
August	9,810,880
September	9,272,812
October	12,205,774
November	9,795,841
*December (estimated)	7,750,000
Total	\$84,779,298
Less amounts set aside for the following purposes—viz.:	
Sinking funds on United States Steel Corporation bonds and bonds of subsidiary companies	\$2,263,292
Reserve funds	9,695,702
	11,958,994
Balance	\$72,820,304
Nine months' interest on bonds	11,400,000
Balance	\$61,420,304
Nine months' dividends on stocks—viz.:	
United States Steel Corporation:	
Preferred, 5½ per cent. (7 per cent. annually)	\$26,752,894
Common, 3 per cent. (4 per cent. annually)	15,227,812
Total	\$41,980,706
Outstanding stocks of subsidiary companies	25,101
	42,005,807

Balance for nine months, applicable to additions to surplus, new construction, &c. \$19,414,497

*During the close of lake navigation, from December to April inclusive, the earnings of mining and transportation companies are, of course, diminished.

From the foregoing statement, it will be seen that the net results from operations of the several companies for the first nine months (December being estimated) are as follows:

After charging to operating expenses, month by month, all current renewals and ordinary repairs for maintenance of plants, the net earnings of the several companies amounted to almost \$85,000,000. From this sum over \$2,250,000 was set aside in a sinking fund to retire bonds of the corporation and its subsidiary companies; \$11,400,000 was paid for nine months' interest on the corporation's bonds; dividends on the preferred stock at the rate of 7 per cent. per annum were paid, amounting to \$26,750,000, and dividends on the common stock at the rate of 4 per cent. per annum were paid, amounting to \$15,227,000, making a total of over \$53,000,000 paid out for interest and dividends on the bonds and stock of your corporation during this period. Nearly \$10,000,000 was set aside in various reserve funds to cover exhaustion of the ore properties, general depreciation of machinery and plants, and to provide for extraordinary enlargements, after all of which there remained as the result of the above nine months' operations undivided earnings of over \$19,000,000.

A satisfactory profit and loss statement showing in detail the earnings and expenses of the several companies cannot be given until their accounting systems are uniform, so that one consolidated profit and loss statement of all companies can be made. The foregoing statement, however, gives a substantially accurate account of the results of the business for the first nine months, except that the earnings for the month of December are estimated.

Balance Sheet.

The date of this report renders it impracticable to give a complete balance sheet as of December 31, 1901, and consequently a balance sheet showing the condition of the companies at November 30, 1901, is submitted. It exhibits the assets and liabilities represented by the capital stocks of the corporation and by outstanding stocks of subsidiary companies, except that, for simplicity, it omits indebtedness from one company to another, as such sums, though assets of one company, are liabilities of some other company.

Condensed Balance Sheet, November 30, 1901.

ASSETS.	
Property account—Cost of properties owned and operated by the several companies	\$1,437,494,862.53
Deferred charges to profit and loss—Expenditures for improvements, explorations, stripping and development at mines, and for advanced mining royalties, which are to be charged to future operations of the properties	3,256,774.09
Investments:	
Outside real estate and other property	429,613.25
Current assets:	
Inventories	\$95,603,997.57
Stocks, bonds and securities of outside companies	7,251,329.45
Accounts receivable	\$45,269,453.19
Bills receivable	2,821,463.55
	\$48,090,016.74
Cash	55,315,527.99
	103,406,444.73
Total	\$1,647,443,021.62
LIABILITIES.	
Capital stock of United States Steel Corporation:	
Common	\$508,212,543.70
Preferred	510,173,778.40
	\$1,018,386,322.10
Capital stocks of subsidiary companies not held by United States Steel Corporation (par value):	
Common stocks	\$365,436.38
Preferred stocks	293,300.00
Lake Superior Consolidated Mines subsidiary companies	113,189.43
	771,925.81
Bonded and debenture debt:	
United States Steel Corporation bonds	\$303,450,000.00
Funded debt of subsidiary companies held by the public	59,349,838.85
Debenture scrip	41,844.57
	362,841,683.42

Mortgages and purchase money obligations (subsidiary companies):		
Mortgages	\$3,457,037.55	
Purchase money obligations..	15,610,754.03	
		19,067,791.58
Current liabilities:		
Pay rolls and accounts payable	\$22,228,343.60	
Bills and loans payable (subsidiary companies).....	12,653,744.27	
Special deposits due employees and others.....	5,435,342.15	
Accrued interest and unrepresented coupons.....	4,870,410.16	
Common dividend No. 2, payable December 20, 1901....	5,081,790.00	
		50,269,630.18
Contingent liability:		
Payment contingent upon retention of leases.....	525,398.87	
Sinking funds and reserves for depreciation...	21,236,040.54	
Surplus of United States Steel Corporation and subsidiary companies.....	174,344,229.32	
Total.....		\$1,647,443,021.62

Inventories.

The inventories represent raw material, goods manufactured and in process of manufacture, and manufactured goods in transit, on consignment or at selling departments. A large part of the inventories on November 30 is made up of the necessary accumulation during the summer and fall of extensive tonnages of iron ore for conversion during the winter and spring, when, owing to the close of navigation, mining and shipping are diminished. The amount of finished product on hand is largely due to inability to obtain freight cars for deliveries to customers. The inventories are taken on the basis of the actual cost of the materials including labor at the several departments of the companies holding the same, and this cost is below the average current market price of such commodities.

The following is a general classification of the inventories on November 30:

Ores	\$34,776,053
Pig iron, scrap, spiegel and ferro.....	4,752,750
Coal, coke and other fuel.....	1,160,361
Pig tin, lead, copper, spelter, nickel, &c.....	2,087,531
Manufacturing supplies and miscellaneous stores otherwise unclassified.....	12,170,161
Ingots, blooms, billets, sheet and tin bars, skelp, rods, muck bar, &c.....	9,343,894
Finished products.....	15,322,636
Mining supplies and stores.....	1,170,859
Railroad supplies and stores.....	851,645
Materials, labor and expense locked up in current uncompleted bridge contracts.....	9,268,361
Materials in transit and on consignment.....	4,699,746
Total.....	\$95,603,997

Sinking Funds and Reserves for Depreciation.

The item of \$21,236,040.54 for sinking funds and reserves for depreciation in the balance sheet is made up as follows:

Sinking fund on United States Steel Corporation bonds	\$1,520,000.00
Sinking funds on bonds of subsidiary companies..	1,264,197.50
Reserved for general depreciation, including that of the ore, coal and coke properties, and for extraordinary outlays which may be required for unusual expenses, for improvements and for renewals	18,451,843.04
Total.....	\$21,236,040.54

The following general statement as to the organization of the corporation is submitted:

Organization and the Issue of Stocks and Bonds.

The United States Steel Corporation were incorporated under the laws of the State of New Jersey, the original certificate of incorporation having been filed at Trenton, February 25, 1901, and the amended certificate April 1, 1901. By the amended certificate the authorized capital stock of the corporation was fixed at 11,000,000 shares of the par value of \$100 each, equally divided into 5,500,000 shares of 7 per cent. cumulative preferred stock (preferred as to both dividends and capital), and 5,500,000 shares of common stock.

Of the total authorized capital stock there have been issued, and at this date (January 10, 1902) are outstanding 5,102,056 shares of preferred stock, and 5,082,273 shares of common stock. The corporation also have issued \$303,450,000 of 5 per cent. bonds secured by a trust

indenture, dated April 1, 1901, to the United States Trust Company of New York as trustee.

Substantially all of these bonds and shares have been issued to acquire the bonds and stocks of the subsidiary companies which were held by the public, as well as considerable amounts thereof which belonged to members of the syndicate and to the syndicate managers—viz.: 1, The bonds and stock of the Carnegie Company and the capital stocks of the several other companies under the original agreement of March 1, 1901, with J. P. Morgan & Co., managers of a syndicate which includes among its members and participants officers and directors of this corporation; 2, the stocks of the American Bridge Company and the Lake Superior Consolidated Iron Mines under the agreement of April 1, 1901, with J. P. Morgan & Co.; 3, the stocks of the Oliver Iron Mining Company and of the Pittsburgh Steamship Company; and, 4, the stocks of the Shelby Steel Tube Company, for which a contract was negotiated in June, 1901, with representatives of the stockholders of that company.

Details of Issue of Stocks and Bonds.

(1), 4,247,688 shares of the common stock and 4,249,716 shares of the preferred stock and \$303,450,000 face value of bonds of the corporation were issued in payment for the \$25,000,000 in cash, paid to the corporation by the syndicate managers, and for the stocks and bonds set forth in the following table, excepting 1644 shares otherwise acquired, and directors' qualifying shares—viz.:

Federal Steel Company:	
Common stock.....	\$46,483,700
Preferred stock.....	53,260,200
National Steel Company:	
Common	31,970,000
Preferred	26,996,000
National Tube Company:	
Common	40,000,000
Preferred	40,000,000
American Steel & Wire Company of New Jersey:	
Common	49,981,400
Preferred	39,999,000
American Tin Plate Company:	
Common	28,000,000
Preferred.....	18,325,000
American Steel Hoop Company:	
Common	19,000,000
Preferred	14,000,000
American Sheet Steel Company:	
Common	24,499,600
Preferred	24,499,600
Carnegie Company:	
Common stock.....	160,000,000
Bonds	159,450,000

(2), 722,025 shares of common stock, and 741,915 shares of preferred stock of the corporation were issued for the acquisition of \$29,413,905 par value of stock of the Lake Superior Consolidated Iron Mines and \$30,946,400 of common stock and \$31,348,000 of preferred stock par values of the American Bridge Company; (3), 92,500 shares each of common and preferred stock of the corporation were issued for the acquisition of an outstanding one-sixth interest in the Oliver Iron Mining Company and in the Pittsburgh Steamship Company, thus securing the ownership of all of the stock of those two companies not owned by the Carnegie Company except directors' qualifying shares; and (4), 20,045 shares of common stock and 17,910 shares of preferred stock of the corporation were issued for the acquisition of \$8,018,200 of common stock and \$4,776,100 shares of preferred stock, par values, of the Shelby Steel Tube Company under the contract above mentioned.

The Aragon Iron Mines leasehold and the stock of the Bessemer Steamship Company have been purchased for cash paid and payable by this corporation or by some of the subsidiary companies above mentioned.

All of the bonds of the Carnegie Company and all of the stocks of the companies acquired as above mentioned by the United States Steel Corporation have been lodged with the United States Trust Company, as trustee, for the benefit of the corporation and their stockholders, and to secure the payment of the \$304,000,000 bonds of the corporation authorized by the deed of trust of April 1, 1901. This deposit affords security to stockholders as well as bondholders against diversion or depletion of these important assets of the corporation.

Circulars, dated March 2, and April 2 and 8, 1901, addressed to the holders of shares of the several companies therein specified were issued and published by the syndicate managers. At the rates offered in the circular dated March 2, 1901, the syndicate acquired the common stocks and preferred stocks of the seven companies (other than the Carnegie Company) as above mentioned, and thereupon sold and transferred the same to this corporation under the contract of March 1, 1901. The syndicate delivered to the holders of such stocks of said seven companies in the aggregate 2,694,909 shares of common stock and 2,616,957 shares of preferred stock of this corporation. The syndicate acquired 60 per cent. (\$96,000,000) of the stock of the Carnegie Company and \$159,450,000 face value of the 5 per cent. bonds of the Carnegie Company by delivering to the holders thereof said \$303,450,000 of bonds of this corporation and \$1,200,000 in cash; and the syndicate acquired the remaining 40 per cent. (\$64,000,000) of the stock of the Carnegie Company by delivering to the holders thereof 982,771 shares of preferred stock and 902,790 shares of the common stock of this corporation.

The residue of the common and preferred stock of this corporation delivered to the syndicate under the contract of March 1, 1901, and not used for the acquisition by it of the stocks of the specified companies, being the shares which, as stated in the syndicate circular of March 2, 1901, were to be retained by and to belong to the syndicate, amounted to 649,987 shares of preferred stock and 649,988 shares of common stock. This residue of stock or the proceeds thereof, after reimbursing the syndicate the \$25,000,000 in cash which it paid to the corporation, and approximately \$3,000,000 for other syndicate obligations and expenses, constituted surplus or profit of the syndicate. The transactions between this corporation and the syndicate having been concluded, an agreement of final settlement and mutual release, dated January 3, 1902, was executed between this corporation and the syndicate managers.

It will be noted that this corporation have received and now own in the aggregate more than 99% per cent. of the shares of all the specified companies. The acquisition of so large a proportion of the shares has enabled the corporation promptly to enter upon the accomplishment of the principal objects which induced their formation, and has facilitated the fulfillment of the original expectations of large reductions in expenditures for improvements, of increased earnings applicable to dividends, and of greater stability of investment, without increasing the prices of manufactured products.

Lease of Pocahontas Coal Lands.

Subsidiary companies of the corporation have secured a lease of 50,000 acres of the best Pocahontas coking and fuel coal property, on a royalty basis, and on favorable terms for production and transportation. Plans for the prompt development of this property on a large scale are under consideration, and it is expected that in the near future there will be received from this field a large supply of coke and fuel coal. With this acquisition, it is estimated that there is now controlled by subsidiary companies a sufficient quantity of the best and cheapest coking coal to provide, on the basis of present consumption, for the necessities of all the furnaces of these companies during the next 60 years. The corporation have guaranteed the performance of this lease on the part of the lessees.

General Results in Organization and Manufacturing.

It was expected that by harmonious co-operation of the several companies great economies in manufacturing would be accomplished, and such expectations have been fully realized. Diversified management has been dispensed with as far as possible, and the several companies have endeavored to adopt similar methods as far as suited to their respective businesses. Great departments, like ore mining, coal mining, manufacture of coke and lake transportation, have been thoroughly systematized, and the managements of the manufacturing plants in the same locality have been brought into closer relations.

The companies have endeavored to concentrate the

manufacture of their various products at the point most favorable to their production, thus insuring to each ultimate economy in manufacturing costs and in the assembling of material. The effort also is made by the different companies to regulate their manufacture of various products so that the fullest advantage can be taken of the economical production of any special article and its cheapest distribution to the consumer.

While each of the above schemes of organization has effected great economies, yet in no direction has this result been more pronounced than in that of manufacturing itself. By frequent interchange of views and full information as to the results in the several companies, each are enabled to reap the advantage of any new economy practiced or discovered by any of the others, so that each company have the advantage of the combined experience of all. Methods of accounting are being made uniform as rapidly as possible so that comparisons may readily be made. In this way, the best result attained by any of the companies is taken as the standard and the other companies endeavor to conform thereto.

Economies in manufacturing thus far have been quite remarkable, but the end is not nearly reached, nor is it likely soon to be, for through the continuous efforts to co-operate and aid in bringing about the best results at each plant, it is certain that even more favorable results ultimately will be accomplished.

The Business Outlook.

The outlook for the year 1902 is very bright. Everything indicates that all of the facilities of each subsidiary company will be taxed to their utmost to supply the demand that is being made. The actual business now booked, and of which shipment is being called for faster than it can be supplied, amounts to more than half the total combined annual capacity of all the companies. The heavier products, like rails, billets, plates and structural material, are sold up to the productive capacity of the mills until nearly the end of the year. In the more highly finished products, the consumption in each case is greater now than at the corresponding period in 1901, which, it should be remembered, was an abnormally heavy year. The expectation, therefore, of those closely connected with the manufacture and sale of these highly finished products is for a demand even larger than that of 1901, and up to the limit of production.

Policy as to Prices.

The demand for the products of the several companies has been so great that prices could easily have been advanced. Indeed, higher prices have been voluntarily offered by consumers who were anxious for immediate execution of orders, but the companies have firmly maintained the position of not advancing prices, believing that the existing prices were sufficient to yield a fair return on capital and maintain the properties in satisfactory physical condition, and that the many collateral advantages to be gained in the long run by refusing to advance prices would be of substantial and lasting value, not only to the companies, but also to the general business interests of the country.

The strong position thus taken by the companies for stability in prices both of raw material and finished products has had a reassuring effect on the trade, and has contributed greatly toward restoring confidence in the general business situation and creating the present large demand for steel products, by dispelling any doubt as to prices in the future.

In the United States Circuit Court at Pittsburgh last week an answer was filed to the petition of the Oliver & Snyder Steel Company for leave to intervene in the case of the Mercantile Trust Company against the Pittsburgh & Western Railway Company. The petitioners claim a balance of \$34,783 on coke shipments, alleging they were to be allowed a rebate for the use of cars. In the answer it is denied there was an agreement between the railroad company and the petitioners, but that such an allowance was made by Henry W. Oliver, which rebate has been paid.

The Sunrise Iron Mines in Wyoming.

BY JOHN BIRKINBINE, PHILADELPHIA.

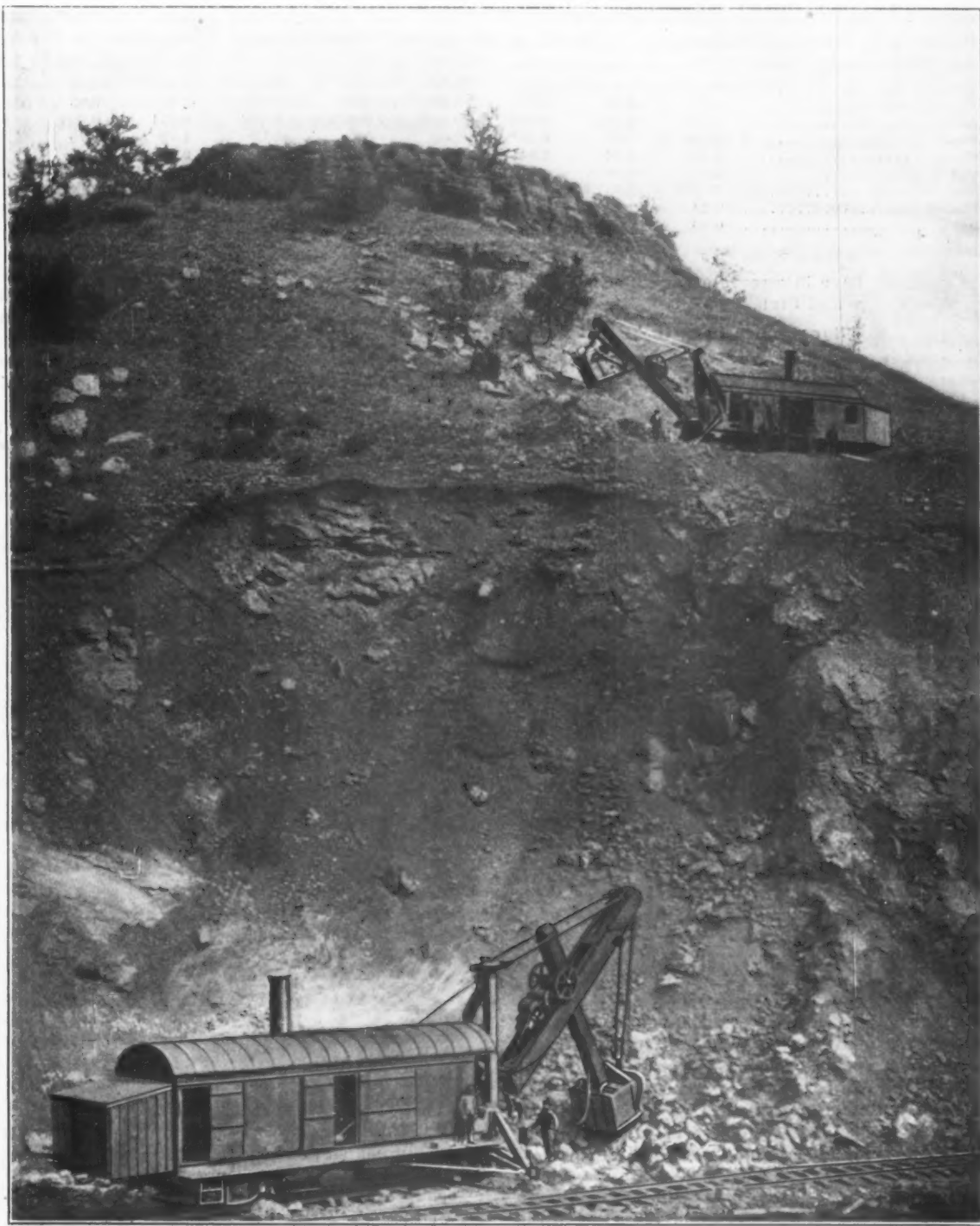
In September last Blast Furnace A of the Minnequa Works of the Colorado Fuel & Iron Company, at Pueblo, Col., was blown in, marking the initial step toward a comprehensive development of the iron and steel industries in the Rocky Mountain region.

Colorado has been producing iron and steel for two

planned, most of which is under contract, will, when finished, have a capacity of 2000 tons of pig iron per day, and the supply of raw materials for this plant is an important consideration.

The rail output of 600 tons per day will be more than doubled, and in addition to a new Bessemer plant, six 50-ton open hearth furnaces will supply the material for plate, sheet and wire mills, which have been contracted for.

As a producer of 5,000,000 tons of coal, part of which



THE SUNRISE IRON MINE IN WYOMING.

decades, on a moderate scale, but the additions being made to the pioneer plant at Pueblo will entitle the Minnequa Works to rank among the great industries of the country, and broaden the field of commercial activity in the Central West.

The two furnaces, which have been in operation for years, are being supplemented by three new stacks, 20 and 21 feet bosh diameter by 90 and 95 feet high. Of these A Furnace is the first to be completed, Furnaces D and E being under construction. The entire plant as

is coked in the 3000 ovens belonging to the company, the fuel problem which seems assured may receive more detailed description later.

The blast furnace plant of the Colorado Fuel & Iron Company draws its supply of ores mainly from three sources: The Fierro Mines, near Hanover, New Mexico, the Orient mine in Central Colorado, and the Sunrise mine in Southeastern Wyoming. The first named furnishes magnetite and red hematite; the second is probably the largest exploited deposit of high grade Besse-

mer brown hematite in the country, and the third deposit, which is described later, consists of an extensive group of red hematite lenses of excellent quality. That the admixture of the above ores gives the Colorado Fuel & Iron Company a basis of supply such as to permit the production of pig iron with a phosphorus content less than that made by most of its competitors, will be recognized from the following analyses. These show the average composition of the three ores mentioned, as supplied to the blast furnaces of the Colorado Fuel & Iron Company for three successive months:

Analyses of Ores Used by the Colorado Fuel & Iron Company.

	Sunrise ore.			Fierro ore.			Orient ore.		
Iron	62.00	62.8	61.70	55.04	55.80	55.80	51.00	54.07	54.25
Silica	5.65	4.85	5.52	8.60	8.05	6.92	7.77	6.95	7.00
Phosphorus	0.024	0.022	0.026	0.006	0.012	0.012	0.021	0.020	0.018
Manganese	0.09	1.05	0.25	0.60	0.70	0.70	1.70	1.75	1.90
Lime	1.48	1.96	1.84	2.52	2.40	2.03	3.69	1.47	1.23
Magnesia	0.36	0.40	0.30	3.75	3.38	3.60	0.95	0.18	0.65
Alumina	1.77	1.05	1.34	0.29	0.29	0.47	0.13	0.14	0.39
Combined water.....	2.24	2.10	2.10	6.10	6.27	7.13	12.4	10.74	10.48
Moisture	6.00	4.63	5.47	...	...	...	12.21	13.42	11.95

The company have in reserve other deposits in Colorado, New Mexico and Utah.

The Sunrise Ore Deposit.

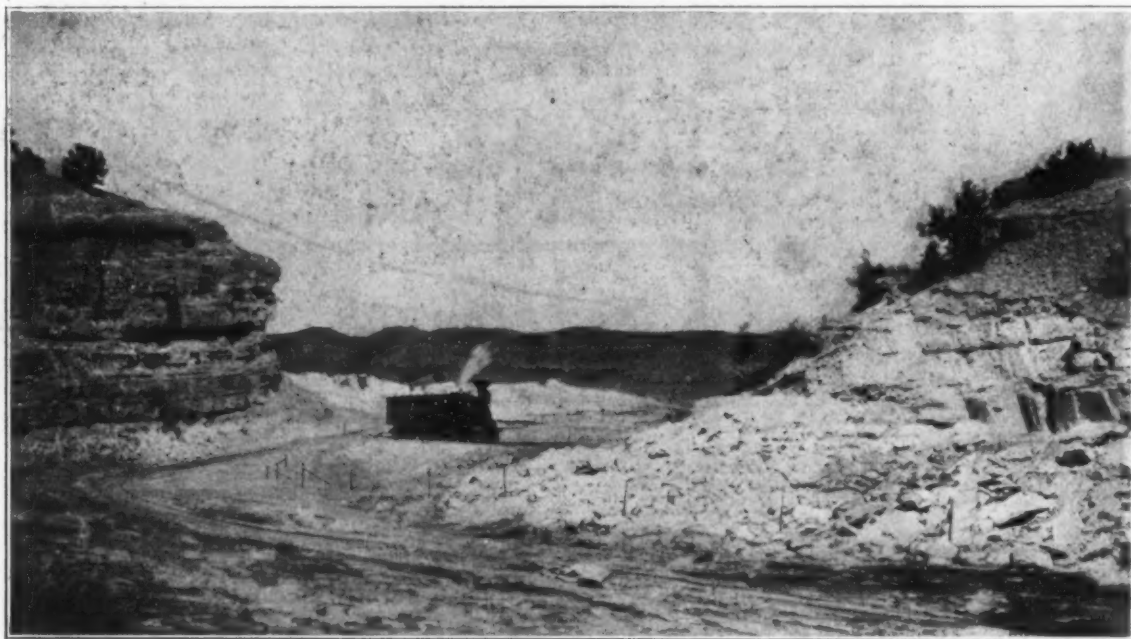
The Sunrise ore deposit, located 132 miles north of Cheyenne, Wyo., known for a number of years as Hartville ore, was discovered in mining for copper, in

vation of 4900 feet above sea level. This ore road is substantially built, laid with 75 and 85 pound steel rails and equipped with consolidation engines.

The first view of the present iron ore workings at Sunrise is impressive, as will appear from the accompanying illustration, which shows one steam shovel loading ore, while a second excavator is removing the overlay from an upper level. The red, greasy appearance of the ore resembles some of the Gogebic range iron ores obtained near the Montreal River, Michigan, or others from the Marquette range iron ores in the vicinity of

Ishpeming, Mich. Further resemblances to Lake Superior ores are in the admixture of lump and fine ores, and the apparent occurrence of the mineral in lenses with walls of schists and quartzites.

In describing the deposits in the vicinity of Sunrise Park, L. D. Ricketts, then State geologist of Wyoming, says:



"THE NARROWS," COLORADO & WYOMING RAILROAD.

some cases the iron ore lying under a cover of copper carbonate.

A number of test pits and drifts exposed the ore and from some of these a copper smelter on the Platte River, now abandoned, was supplied, and although there is evidently copper overlaying some of the iron ore the latter as mined is not cupriferous. A considerable quantity of iron ore had also been extracted, hauled by wagon to the nearest railroad and forwarded to silver smelters as flux, when in 1899 the Colorado Fuel & Iron Company after thorough investigation secured control of a large tract which gave satisfactory indications, and prepared to develop the property for large output.

For this purpose a standard gauge railroad 16 miles in length was built to connect with the Cheyenne and Northern branch of the Colorado Southern Railroad. After crossing the Platte River by the company's bridge at an altitude of 4900 feet, connecting at the river with the Burlington system, the Colorado & Wyoming road climbs to the iron ore mines, reaching in 5½ miles an ele-

"Three classes of deposits may be recognized.

"1. Lenticular masses of iron ore between walls in crystalline slates. These are similar in nature to the hematite deposits in Michigan and Wisconsin.

"2. Stratified deposits of usually impure hematite lying at the base of the cap rocks between the quartzite and slates.

"3. Boulders and pebbles of hematite lying in the soil that have resulted from denudation of the first two classes."

In a paper presented in 1900, before the American Institute of Mining Engineers, Dr. H. M. Chance says:

"Besides the known ore bodies there are numerous indications of the existence of others of similar character. Most of the district is covered by a nearly horizontal capping of sandstone or quartzite, 100 to 200 feet thick, which lies upon the upturned edges of the older slates in which the ore deposits occur; and it is only in the gulches and cañons, where erosion has cut away and removed this cap rock, exposing the underlying slate

formation, that the ore bodies can be seen. Future development will doubtless show that they extend along the trend of the formation, beneath this cap rock, far beyond the points at which they may now be seen, and the deposits so hidden may prove as large and valuable as those upon which existing developments have been made. In addition to the lenticular ore bodies the district contains deposits of another class of deposits, which I term secondary or replacement deposits, occurring above the slates, in or near the base of the cap rock, and sometimes connected with replacement deposits in partially disintegrated siliceous limestone."

C. S. Robinson, general manager of the iron department of the Colorado Fuel & Iron Company, is having other portions of the property than the Sunrise part explored by drift and by diamond drills, with encouraging results. Realizing that the ore deposit at Sunrise will rank among the important producers of the country, he has placed the local work in charge of J. D. Gilchrist, who formerly managed the Mountain Iron Mine on the Mesaba range in Minnesota, and over 1000 tons per day have been sent forward to supply the Pueblo furnaces. This ore is at present all taken from the Sunrise Mine illustrated, but developments now in progress insure the early opening of other neighboring sources.

The character of the ore won from the Sunrise Mine and the variations due to the method of exploitation may be judged by monthly average analyses of the ores used at the blast furnaces during the year 1901, dried at 212 degrees F.

Analyses of Sunrise (Wyoming) Ore as Used (Averaged) During the Year 1901.

Sunrise.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Fe	63.15	63.2	62.46	62.42	61.46	62.6	59.7	58.1	59.35	54.6	55.07	54.54
Fe ₂ O ₃	90.21	90.28	89.23	89.17	87.80	89.42	85.28	83.0	84.78	79.0	78.67	77.91
Phosphorus	0.026	0.026	0.024	0.022	0.018	0.026	0.29	0.033	0.027	0.20	0.034	0.033
SiO ₂	3.94	3.42	4.19	3.99	5.14	4.6	6.25	7.30	7.20	10.25	8.85	11.3
Mn	0.10	0.25	...	...	...	...	...	...	...	...	...	...
Al ₂ O ₃	2.19	1.25	2.67	2.61	2.27	2.39	2.61	3.53	...	4.45	3.66	3.87
CaO	1.35	2.19	1.41	1.66	1.78	0.74	1.82	2.00	...	1.54	2.09	1.85
MgO	0.32	0.29	0.25	0.48	0.40	0.43	0.42	0.30	...	0.30	0.36	0.50
Sul	0.036	...	...	...	...	0.038	...	0.038	...	0.038	0.065	0.05
Vol.	1.40	1.76	1.80	1.96	2.00	1.80	3.10	2.90	...	2.40	3.42	2.60
Moist.	5.29	6.50	5.80	5.85	4.65	5.50	5.75	5.25	...	5.80	4.50	5.50

In winning the ore by steam shovel, there is, as might be expected, lean material removed, especially adjacent to the slates, but judicious operation permits of winning cheaply ore of the character above indicated, and some of the ore yields as much as 66 to 67 per cent. of iron. As exploitation is extended new faces exposed and the stripping advanced well ahead of mining, greater regularity in composition may be anticipated, but the above will be accepted by blast furnace managers as ore of most satisfactory composition.

In a series of deposits apparently extensive as those at and near Sunrise, variations in the iron contents or modifications of the proportions of phosphorus may be expected, and it is probable that ores outside of the Bessemer limit will be found. Should this be the case it will not prevent the use of those otherwise desirable. But as far as present exploitations go, the Sunrise deposit is entitled to be considered a high grade Bessemer hematite, and further extensions are as likely to produce equally desirable mineral as leaner ore or ore with higher phosphorus. That the deposit covers a considerable area is evident from an inspection of the properties by the writer, who anticipates that the locality will rank as one of the large iron producing districts of the United States.

The ore, as won, may be classed as hard and soft ores, the former averaging more iron and less silica than the latter, and showing when freshly broken a bluish tint, but the soft ore is often unusually low in phosphorus. The large lumps which occur with the more finely comminuted ore, are a source of annoyance when steam shovel mining is prosecuted and the ore received at the blast furnaces in bins.

Provision is being made at the Minnequa Works for crushing all ore as received, so as to facilitate its delivery through the bins and feed the material in more desirable form to the blast furnaces.

Many of the larger lumps in the Sunrise open cut

jeopardize the steam shovel, and must be block holed and sledged to bring them to dimensions which correspond with bucket capacity.

The illustration will suggest that the initial attack exposes too high a face for the most satisfactory steam shovel work, and opens the question as to whether the open cut is the most economical method in a deposit which at present shows a face 60 feet wide and of equal height extending for fully 1000 feet in length, with a bottom in which ore is persistent, as far as tested.

The Sunrise deposit is located 375 miles nearly due north from the Minnequa plant at Pueblo, and the source of supply is connected with the point of consumption by standard gauge railroad, which insures delivery of the ore without transshipment.

A New Iron Pigment.

A new pigment is thus described by the *Electrical World and Engineer*: Dr. Alexander S. Ramage of Cleveland, Ohio, discloses a method of producing a remarkable iron pigment, with an old formula and new properties—the hydrated basic ferric oxide Fe₂O₃·Fe(OH)₃. It presents one of the first commercial applications of those physico-chemical theories which have been developed largely by the study of dilute electrolytes. In outline the process is as follows: The waste ferrous liquor derived from iron pickling—generally ferrous sulphate or chloride with some free acid—is neutralized,

and then oxidized by the joint action of air and steam. As the oxidation proceeds an alkali, as sodium carbonate in solution, is added in quantity sufficient to maintain substantial neutrality, and simultaneously therewith a large volume of water, which, as will appear, is the true precipitating agent.

The effect is that known as hydrolysis, or the decomposition by water of a salt composed of a base and acid between which there is a great disparity of strength, in the present instance a compound of a weak base with a strong acid. By the oxidation of the ferrous sulphate, basic ferric sulphate is formed, and this salt in the presence of the large volume of water is hydrolyzed, yielding sulphuric acid and basic ferric hydrate—the pigment in question. A reaction of this character would, of course, soon reach an equilibrium and the yield of pigment would be but small, wherefore the gradual addition of the alkali to combine with the acid as it is liberated and to insure the continuance of the reaction to complete precipitation of the iron. The pigment is light yellow in color, but is readily converted by heat into the several iron oxide reds, and affords also a suitable base for mixed pigments. Its absorptive capacity for oil greatly exceeds that of the standard pigments, being two and one-half times that of standard French ochre and seven and one-half times that of white lead. Its covering power as compared with these pigments is almost proportionately high.

George Q. Hill, successor to the Dodge Machine Screw Company, with office at 152 Purchase street, Boston, Mass., has accepted the sole selling agency of the product of the Ansonia Mfg. Company of Ansonia, Conn., makers of brass screw machine products.

The Otis Elevator Company have purchased the Plunger Elevator Company of Worcester, Mass.

The Proposed Cuban Metal Schedule.

WASHINGTON, D. C., February 4, 1902.—The exact details of the proposition for a reciprocity agreement with Cuba, which have been formulated on behalf of the incoming independent government of the island by Collector Bliss of Havana and certain prominent Cuban leaders, who, it is assumed, will be identified with the new Government, will be made public in a few days. They represent the concessions which Cuba proposes to make in the island's tariff on goods coming from the United States in order to give American manufacturers and exporters practically complete control of the Cuban markets, and so far as they relate to the metal schedule they are set forth in full below.

In view of the fact that Cuba cannot afford to sacrifice any considerable part of her revenue, it is proposed that the present rates, slightly reduced in certain instances, shall be retained for merchandise coming from the United States, but that advances shall be made ranging from 20 to 100 per cent. on similar goods imported from foreign countries. The result of this scheme, it is confidently asserted, will be to give the island a revenue of not less than \$12,000,000, and at the same time will divert to the United States about 85 per cent. of Cuba's foreign purchases. These concessions are to be granted in exchange for a reduction of from 25 to 50 per cent. of the present Dingley rates on Cuban sugar and tobacco. The following is the proposed metal schedule, showing the present general tariff, the proposed rate on foreign merchandise, and the rate on similar goods from the United States:

Cast Iron.

(1, Articles of malleable cast iron are dutiable as manufactures of wrought iron.

	Present rate	Proposed rate foreign merchandise.	Proposed rate United States merchandise.
Cast iron:			
31. Pigs, 100 kg.....	\$0.10	\$0.20	\$0.10
32. Articles not coated or ornamented with another metal or porcelain, neither polished nor turned:			
a. Bars, beams, plates, grates for furnaces, columns and pipes, 100 kg.....	.50	1.00	.50
b. Lubricating boxes for railway trucks and carriages and railway chairs, 100 kg.....	.35	.70	.35
c. Articles, other, 100 kg.....	.75	1.50	.75
33. Articles of all kinds not coated or ornamented with another metal or porcelain, polished or turned, 100 kg.....	1.20	2.40	1.20
34. Articles of all kinds, enameled, gilt, tinned or coated or ornamented with other metals or porcelain, 100 kg.....	2.30	4.60	2.30
Wrought Iron and Steel.			
35. Iron, soft or wrought, in ingots or "toches;" steel in ingots, 100 kg.....	.40	.80	.40
36. Wrought iron or steel, rolled:			
a. Rails, 100 kg.....	.50	.55	.33
b. Bars of all kinds, including rods; tires and hoops, 100 kg.....	.90	1.10	.70
c. Bars of all kinds of fine crucible steel, 100 kg.....	1.60	1.60	1.20
37. Sheets, rolled:			
a. Neither polished nor tinned, of 3 mm. and more in thickness, 100 kg.....	1.10	1.10	.55
b. Neither polished nor tinned, or less than 3 mm. in thickness, and hoop iron, 100 kg.....	1.20	1.20	.90
c. Tinned and tin plate, 100 kg.....	1.50	2.20	1.10
d. Polished, corrugated, perforated, cold rolled, galvanized or not, and bands of polished hoop iron, 100 kg.....	1.30	1.30	1.00
38. Wrought iron or steel:			
Cast in pieces, in the rough, neither polished, turned nor adjusted, weighing, each:			
a. 25 kg. or more, 100 kg.....	1.00	1.00	.80
b. Less than 25 kg., 100 kg.....	1.35	1.35	1.00

39. Cast in pieces, finished:			
a. Wheels weighing more than 100 kg., fish plates, chairs, sleepers and straight axles; springs for railways and tramways; lubricating boxes, 100 kg.....	.60	.60	.50
b. Wheels weighing 100 kg. or less; springs other than for railways and tramways; bent axles and cranks, G.W., 100 kg.....	1.40	1.40	1.10
40. Pipes:			
a. Covered with sheet brass, 100 kg.....	1.40	1.40	1.00
b. Other, galvanized or not, 100 kg.....	1.40	1.40	1.00
41. Wire, galvanized or not:			
a. 2 mm. or more in diameter, 100 kg.....	1.00	1.25	1.00
b. More than 1/2 and up to 2 mm. in diameter, 100 kg.....	1.30	1.625	1.30
c. 1/2 mm. or less in diameter, and wire covered with any kind of tissue, 100 kg.....	1.60	2.00	1.60
42. In large pieces, composed of bars, or bars and sheets fastened by means of rivets or screws; the same, unriveted, perforated or cut to measure for bridges, frames and other buildings, 100 kg.....	1.80	2.25	1.80
43. Anchors, chains for vessels or machines, moorings, switches and signal disks, 100 kg.....	.80	1.00	.80
44. Anvils, 100 kg.....	2.50	3.125	2.50
45. Wire gauze:			
a. Up to 20 threads per inch, 100 kg.....	5.00	5.50	4.40
b. Of 20 threads or more per inch, 100 kg.....	.10	.125	.10
46. Cables, fencing and netting; furniture springs, 100 kg.....	1.00	1.20	.90
47. Tools and implements (not apparatus):			
a. Fine, for arts, trades and professions, of crucible steel, 100 kg.....	8.00	8.80	6.60
b. Other, 100 kg.....	2.50	3.30	2.20
48. Screws, nuts, bolts, washers and rivets; nails, clasp nails, tacks and brads, 100 kg.....	1.50	2.00	1.10
49. Saddlery hardware:			
a. Made of iron or steel, bits, spurs, and all finishes for common harness, 100 kg.....	3.00	3.30	2.20
b. Made of composition or materials other than iron or steel, shall be dutiable according to its chief component material.			
50. Buckles:			
a. Nickeled, kilogram.....	.20	.30	.15
b. Other, kilogram.....	.15	.20	.10
51. Needles, sewing or embroidering, pins and pens, kilogram.....	.36	.40	.20
52. Crochet hooks, hooks and hairpins, kilogram.....	.30	.40	.20
53. Cutlery:			
a. With common wooden handles, such as used by butchers, shoemakers, saddlers and cooks, including table knives and forks with common wooden handles, kilogram.....	.20	.40	.20
b. All other cutlery (except pocket cutlery), including scissors; fishing hooks, kilogram.....	.40	.80	.40
c. Surgical, including dental instruments; pocket cutlery, side arms (not fire) and pieces for same; razors, kilogram.....	.60	1.20	.60
54. Small arms and barrels:			
a. Barrels, unfinished, for portable arms, kilogram.....	.25	.40	.25
b. Barrels, finished, for portable arms, kilogram.....	.60	1.00	.60
c. Small arms, such as pistols and revolvers, also their detached parts, except barrels, kilogram.....	2.50	3.30	2.20
55. Sporting arms, breech and muzzle loading, and detached parts thereof, except barrels, per cent. ad valorem.....	25	50	25
56. Manufactures of tin plate, 100 kg.....	\$4.00	\$4.40	\$3.30
Wrought iron or steel:			
57. Articles of all kinds not specially mentioned, fine, i. e., polished, enameled, coated with porcelain, nickel or other metals (with the exception of lead, tin or zinc), or with ornaments, borders or parts of other metals, or combined with glass or earthenware, 100 kg.....	4.00	4.40	3.30

Copper and Alloys of Common Metals With Copper, Brass, Bronze, Etc.

59. Copper scales (laminae), copper of first fusion, old copper, brass, &c., G. W., 100 kg.....	3.00	4.50	3.00
60. Copper and alloys of copper; in ingots, 100 kg.....	4.00	6.00	4.00
61. Rolled in bars of all kinds, 100 kg.....	4.50	5.50	4.40
62. Rolled in sheets, 100 kg.....	5.00	5.50	4.40
63. Wire, galvanized or not:			
a. 1 mm. and more in diameter, 100 kg.....	6.00	6.60	3.50
b. Less than 1 mm. in diameter, 100 kg.....	7.50	7.50	6.00
c. Gilt, silvered or nickeled, kilogram.....	.50	.75	.50
64. Wire covered with tissues or insulating materials; conducting cables for electricity over public thoroughfares, 100 kg.....	7.50	8.25	6.60
65. Wire gauze:			
a. Up to 100 threads per inch, kilogram.....	.20	.30	.20
b. Of 100 threads or more per inch, kilogram.....	.40	.60	.40
66. Pipes, bearings, plates for fire places, and boiler makers' wares partially wrought, 100 kg.....	4.50	5.50	4.40
67. Nails and tacks, except as included in paragraph 301*:			
* Coffin nails, 25 per cent. ad valorem.			
a. Gilt or nickeled, kilogram.....	.20	.30	.15
b. Other, kilogram.....	.12	.15	.10
68. Pins or pens, crochet hooks, or hairpins, kilogram.....	.60	.75	.50
69. Articles not specially mentioned, varnished or not, kilogram.....	.20	.25	.20
70. Articles, gilt or nickeled, not specially mentioned, except when exclusively used for sanitary constructions, kilogram.....	.50	.625	.50
a. In articles, gilt or nickel, when exclusively used for sanitary constructions, kilogram.....	.20	.25	.20
Other Metals and Their Alloys.			
71. Mercury, kilogram.....	.20	.20	.20
72. Nickel, aluminum and their alloys:			
a. In lumps or ingots, 100 kg.....	3.00	3.00	3.00
b. In bars, sheets, pipes and wire, 100 kg.....	7.00	7.00	7.00
c. In other articles of all kinds, kilogram.....	.50	.60	.45
73. Tin and alloys thereof (Britannia metal):			
a. In lumps or ingots, 100 kg.....	4.00	4.00	3.30
b. In bars, sheets, pipes and wire, 100 kg.....	7.00	7.50	6.50
c. Hammered in thin leaves (tin foil) and capsules for bottles, kilogram.....	.04	.06	.04
d. In other articles of all kinds, kilogram.....	.50	.75	.45
74. Zinc, lead and other metals, not specially mentioned, and their alloys:			
a. In lumps or ingots, 100 kg.....	1.00	1.10	.55
b. In bars, sheets, pipes and wire, including shot, 100 kg.....	1.50	1.65	1.10
c. In articles, gilt or nickeled, except when exclusively used for sanitary constructions, kilogram.....	.30	.40	.30
d. In articles, gilt or nickeled, when exclusively used for sanitary constructions, kilogram.....	.20	.25	.20
e. Zinc nails and tacks, neither gilt nor nickeled, kilogram.....	.07	.10	.05
f. In other articles, including type, kilogram.....	.15	.20	.12
Wastes and Scoriae.			
75. Filings, shavings, cuttings of iron or steel, and other wastes of cast iron or from the manufacture of common metals, fit only for remelting, 100 kg.....	.15	.20	.15
76. Scoriae resulting from the smelting of ores, 100 kg.....	.03	.05	.03

The action of the House in postponing consideration of the Cuban reciprocity question until the bill abolishing the war taxes has been disposed of is taken here to mean that nothing further will be done with the reciprocity plan until it is taken up by the Senate. The Administration is apparently determined that the desired concessions to Cuba shall be made, and a protracted and stubborn contest between the two Houses seems inevitable.

W. L. C.

Our Imports of Iron and Steel.

The annual figures of the Bureau of Statistics show the following as to the imports of iron and steel:

<i>Imports of Iron and Steel.</i>			
	1899.	1900.	1901.
Iron and steel and manufactures of:			
Iron ore, tons.....	674,082	870,831	966,950
Pig iron, tons.....	40,393	52,565	62,930
Scrap iron and steel, fit only to be manufactured, tons.....	10,925	34,431	20,130
Bar iron, net tons.....	22,116	22,047	23,301
Bars, railway, of iron or steel, or in part of steel, tons.....	2,134	1,448	1,905
Hoop, band or scroll, net tons.....	743	185	3,330
Ingots, blooms, slabs, billets and bars of steel, and steel in forms n.e.s., net tons....	14,113	14,234	9,130
Sheet, plate and taggers iron or steel, net tons....	7,884	5,761	6,301
Tin plates,terne plates, and taggers tin, net tons....	65,935	67,632	86,682
Wire rods, net tons.....	20,120	23,623	18,820
Wire and articles made from, net tons.....	2,647	2,064	4,624
Manufactures of:			
Anvils, net tons.....	268	250	281
Chains, net tons.....	210	291	222
Cutlery.....	\$1,408,811	\$1,577,589	\$1,707,305
Files, file blanks, rasps and floats.....	47,624	70,283	52,353
Firearms.....	798,742	846,274	1,081,429
Machinery.....	2,185,566	3,916,458	2,996,202
Needles, hand sewing and darning.....	366,412	369,365	404,294
Shotgun barrels, in single tubes, forged, rough bored.....	158,734	207,706	292,589
All other.....	1,456,407	1,686,183	1,753,077
<i>Imports of Metals, &c.</i>			
	1899.	1900.	1901.
Antimony:			
Ore, gross tons.....	1,777	2,695	773
As regulus or metal, net tons.....	1,580	1,816	1,837
Brass, manufactures of.....	\$58,916	\$20,113	\$35,976
Sulphur or brimstone, crude, gross tons.....	140,841	166,457	174,162
Sulphur ore, containing over 25 per cent. of sulphur, gross tons.....	310,008	332,517	398,969
Coal:			
Anthracite, gross tons.....	61	718	286
Bituminous, gross tons.....	1,400,461	1,909,258	1,919,962
Copper and manufactures of:			
Ore and regulus, gross tons.....	31,637	55,112	96,047
Pigs, bars, ingots, plates, old and other manufactured, net tons.....	35,961	34,398	36,913
Manufactures of.....	\$42,000	\$23,390	\$24,775
Lead and manufactures of:			
Lead in ore and base bullion, net tons.....	96,198	114,197	111,867
Pigs, bars and old, net tons.....	241	210	604
Manganese, ore and oxide of, gross tons.....	188,349	256,252	165,720
Platinum, pounds.....	6,705	7,606	6,106
Plumbago, gross tons.....	20,753	14,293	14,299
Metals, metal compositions and manufactures of, n.e.s:			
Bronze manufactures.....	\$710,086	\$797,306	\$945,702
All other.....	\$4,008,942	\$5,420,483	\$5,162,392
Tin, in bars, blocks, pigs or grain or granulated, net tons.....	35,624	34,995	37,280
Zinc or spelter and manufactures of:			
In blocks or pigs, and old, net tons.....	1,493	1,007	388
Manufactures of.....	\$14,800	\$36,836	\$42,643

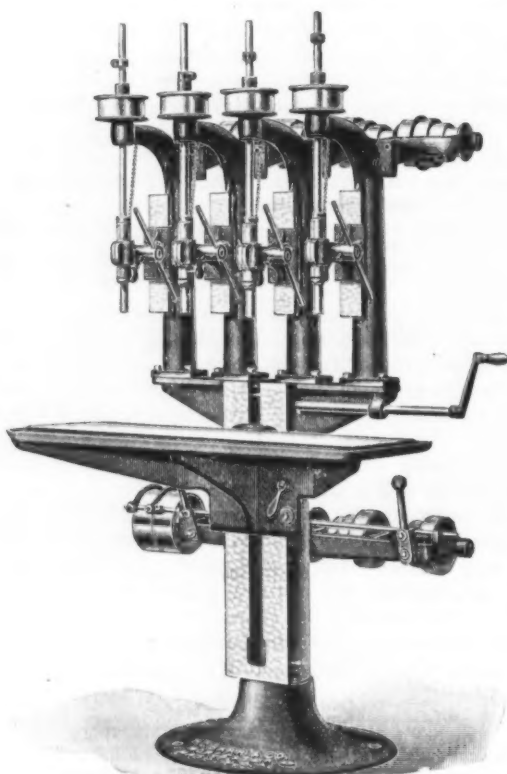
A notable increase has taken place in the item of imports of "copper ore and regulus," the value of which jumped from \$5,195,010 in 1900 to \$14,692,645 in 1901. This is due chiefly to the imports for refining of matte from distant countries.

The imports of manganese ore have fallen off quite heavily, although our domestic production of ferromanganese and spiegeleisen increased somewhat.

There has been a steady advance in recent years in the imports of sulphur materials, which indicates a growing civilization, if it be true, as claimed, that the consumption of sulphuric acid in a country is the best measure of its progress.

The Barr Four-Spindle Drill.

Several new features have been added to the four-spindle upright drilling machines built by H. G. Barr & Co. of Worcester, Mass. The table is heavy and well braced, the columns large and a raising screw, provided for the table, makes easy and fine adjustments possible.



THE BARR FOUR-SPINDLE DRILL.

The spindle pulleys run on stationary sleeves and do not wear the spindle out of line. The driving cones are what are commonly known as "two-piece cones." All the small posts are connected at the top by a solid yoke, and the face of the posts and column are surfaced to plate. Each drill is independently counterbalanced.

The distance from the front of the column to the center of the spindle is $7\frac{1}{4}$ inches and from the post 8 1-16 inches. The maximum distance from the spindle to the table is 32 inches. The distance between spindle centers is 8 inches, the traverse being $3\frac{1}{2}$ inches and the diameter of the spindle in the quill $\frac{3}{8}$ inch. The vertical adjustment of the head is 7 inches. The table is 15 x 44 inches, and is formed with a large oil groove on all sides.

The Allis-Chalmers Company, at Scranton, Pa., have announced an increase of wages for their molders and a minimum wage scale of \$2.50 a day. This announcement was made after the company's officials had held a conference with Vice-President John P. Frey of the Iron Molders' International Association. It is thought that the same scale will be accepted by the other foundries of that city.

The Cambria Steel Company.

The following are the principal features of the first annual report of the Cambria Steel Company:

Your company exist as the result of the consolidation and merger of the Cambria Steel Company and the Conemaugh Steel Company, which became effective August 15, 1901. The report now submitted covers the operations of the two and one-half months from August 15 to October 31, 1901, the date upon which your fiscal year now ends. It is in contemplation to change this closing date so that, commencing with the year 1902, your fiscal year will end December 31.

The results of the two and one-half months' business are as follows:

Gross earnings.....	\$3,987,435.33
Operating expenses.....	3,166,078.40
Net earnings from operations to October 31, 1901	\$821,356.93
To which add: Incidental receipts for rents from tenants, income from investments and interest on bank accounts.....	91,034.51
	\$912,391.44

Deduct fixed charges under Cambria Iron Company lease, interest on term notes and incidentals	92,999.68
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Net income from all sources.....	\$819,391.76
Deduct depreciation charged to income.....	360,263.64

Balance to credit of Income account, October 31, 1901.....	\$459,128.12
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There has been credited direct to profit and loss account \$170,637.36 from the October 31 annual dividend of the Penn Iron Mining Company, and from the accumulated overruns, chiefly in your blast furnace stock of ores, that could not be definitely determined until an exact inventory was made.

The assets and liabilities of your company, as shown by your treasurer's books, are as follows:

Assets.

Property, works, coal, ore lands, &c., subject to payment of \$338,720 annual rental, under Cambria Iron Company lease for 999 years, being 4 per cent. on \$8,468,000, Cambria Iron Company's stock.....	\$33,090,804.68
Sundry securities.....	49,985.00
Special time deposits.....	7,750,000.00
Inventory account.....	4,693,009.56
Insurance account (prepaid).....	11,788.97
Bills receivable.....	443,519.28
Accounts receivable.....	3,622,174.13
Cash	844,039.02
Total.....	\$50,504,820.64

Liabilities.

Capital stock.....	\$45,000,000.00
Cambria Iron Company 6 per cent. gold loan....	218,100.00
Accrued interest on Cambria Iron Company bonds and scrip	4,362.00
Accounts payable.....	4,652,593.16
General income account.....	459,128.12
Profit and loss.....	170,637.36
Total.....	\$50,504,820.64

The provision in your lease of the property of the Cambria Iron Company, December 1, 1898, requiring the expenditure of \$5,000,000 in permanent improvements on said property, or in the purchase of other properties, has been fully complied with by actual investments already made.

The coal and iron ore mines controlled by your company were operated successfully during the term for which this report is made, and their products were of great advantage in the economical conduct of your manufacturing operations. Your company are fortunate in controlling the product of so large a share of the raw materials consumed in their works.

The congested condition of the transportation facilities on which you depend restricted to some extent the output of your works and added to the cost of operating.

The new open hearth plant, six 50-ton furnaces, at Franklin, is now in successful operation. A 134-inch plate mill has been authorized, and is under construction. It is expected to be ready to start at some time during the summer of 1902. A considerable portion of its product will be used in your structural and car departments, avoiding vexatious delays in depending upon

other manufacturers for your supply. A car plant has been completed, and is now in successful operation. Its capacity will be further increased at an early date. The coal property, with coking plant, leased by the Cambria Iron Company from the Connellsville Gas Coal Company, September 2, 1879, is about exhausted, and the manufacture of coke will cease during 1902. This renders it important to further extend your coking at Johnstown, and it is estimated that 200 Otto-Hoffman by-product ovens will be required to replace this exhaustion. The addition of another large blast furnace to your plant would be necessary to fully supply your steel making capacity.

The physical condition of your existing plant is being improved as rapidly as possible, consistent with the demands upon it for product. After the present extraordinary era of prosperity has passed, as it certainly will, the best protection for your interests will be to have your plant so perfected and your finances maintained in such strong condition as will enable you to successfully meet the close competition that must necessarily follow.

The Duty on Nickel Plated Tin Plates.

WASHINGTON, D. C., February 4, 1902.—The Treasury Department has promulgated an interesting decision with regard to the dutiable classification of tin plates plated with nickel on one side, in which is discussed the entire question of the proper classification of plates treated in any other manner than by the ordinary process of tinning. The facts in the case upon which the ruling is made, together with the Department's decision, are set forth in the following communication from Acting Secretary Spaulding to the Collector of Customs at New York:

The merchandise in question consists of tin plates 21 inches wide, 30 inches long and 0.023 inch thick, plated with nickel on one side and commercially designated as "nickel plated tin plates."

In Treasury decision 6844, dated April 7, 1885, the Department decided that certain "lacquered tin plates" consisting of the ordinary tin plates of commerce, coated with a thin varnish or lacquer to imitate brass, used in the manufacture of tin cans, boxes, signs, &c., were dutiable as "tin plates" under paragraph 153 of the tariff act of 1883, of which paragraph 134 of the existing tariff act is a substantial re-enactment. And in the unpublished decision of the Board of United States General Appraisers, dated October 29, 1900, in the matter of the protest of the American Trading Company, it was held that certain "gold lacquered crystallized tin plates," were classifiable under the provision for tin plates in paragraph 134, and not under paragraph 193 of the tariff act of July 24, 1897. The Board remarked, citing Treasury decision 6844, *supra*, that—

"The fact that these tin plates have been covered with a coating of lacquer does not alter their classification, for they still remain tin plates, but their designation as lacquered tin plates is solely to distinguish them from the plain and ordinary tin plates."

Paragraph 134 provides for sheets or plates of iron or steel, commercially known as tin plates, "coated with tin or lead, or with a mixture of which these metals, or either of them, is a component part." . . . It therefore might be objected that tin plates, coated or plated with nickel, are not specifically provided for in that paragraph, but the article in question would nevertheless fall within its terms by virtue of the similitude clause in section 7 of said act.

In view of the foregoing and as tin plates are expressly excepted from the provisions of paragraph 132, imposing an additional duty of two-tenths of 1 cent per pound on iron or steel sheets or plates "when galvanized or coated with zinc, spelter, or other metals, or any alloy of those metals," . . . the Department concurs with the views expressed by you that the merchandise here under consideration is dutiable at 1½ cents per pound, under said paragraph 134 of the existing tariff act. It should be added that the assessment of a lower rate of duty on articles not specially provided for in the present law, manufactured wholly or partly from tin plate other

than that imposed on the tin plate of which they are made, is prohibited by the terms of paragraph 140 of said act. You will be governed accordingly. W. L. C.

Central Pennsylvania News.

HARRISBURG, PA., February 4, 1902.—The snowstorms which have been raging in this part of the State have not caused much trouble to the works. The blast furnaces have been kept going, as the car shortage has been overcome, and February commences with fair prospects for a month which will eclipse some of the busiest of the last year. Almost every works in this city and vicinity reports much inquiry, and efforts are being made to run out orders so that the spring and summer work, most of which was booked long ago, may not be retarded. It is stated that the production for January at the Pennsylvania Steel Works was close to the highest for a long time, the rail mill alone making a small tonnage because it was running on light rails.

Charters issued by the State this last fortnight include: The Tacony Iron Company, Philadelphia, capital, \$50,000; J. B. Stevenson, third; E. O. Custer and H. Rainey, owners; American Foundry & Machine Company, Hanover, capital, \$100,000; Thomas M. Brown, principal owner; National Bridge Company of Pennsylvania, \$5000 capital, incorporators, William Conger, A. M. O'Brien and E. M. Schofield, all of Pittsburgh; Greensburg Foundry & Machine Company, Greensburg, M. A. Prugh, W. Truxell and Thomas Donohue, Greensburg.

It is currently reported in the city that the Lucknow Forge, just above this city, will be improved. It is operated by the Lucknow Iron & Steel Company, and has been making charcoal blooms.

There is much activity among the industries at Milton. The works of the Milton Mfg. Company report a great deal of business and the car plant is busy. There is talk of more industries.

The old Esther Furnace property near Bloomsburg has been bought by a mining company who will operate it for metals. It is said that copper has been struck, and a report is going the rounds that a vein of gold was struck not far from the site of the old iron works. A smelter will be erected.

The Reading Iron Company have more men on their rolls at Reading than for a long time, and all mills and furnaces are being run. It is said that \$50,000 was paid out in wages on the first of the month.

A number of iron and steel corporations have filed notices of increases of capital stock at the State capital, thereby indicating intentions to expand. They include Bessemer Gas Engine Company, Mercer, increased from \$100,000 to \$150,000; Acme Radiator Company, Uniontown, from \$28,000 to \$150,000; William Kane Mfg. Company, Philadelphia, from \$1000 to \$150,000, and Reading Foundry Company, Reading, from \$10,000 to \$300,000.

The last fires were drawn from the furnaces in the North Mill of the Lackawanna Iron & Steel Company's works, at Scranton, last week.

The plant of the Harrisburg Mfg. & Boiler Company was damaged to the extent of \$1500 by fire last week.

Raymond Mfg. Company of Middletown are busy on foundry orders, and some large shipments have been made within the last two months.

The York Mfg. Company have made a number of shipments of ice machines to the Orient. One large one was sent to Japan, and the trade in that direction is increasing.

The Stroudsburg Engine Company were organized last week with a capital of \$30,000, and a factory will be built at once for the manufacture of engines and boilers. Joseph Shiffer was elected president; Cicero Gearhart, secretary; A. B. Wyckoff, treasurer; Hiram Frisbie, P. H. Pipher, Joseph Shiffer, W. A. Gilbert, W. A. Travis, M.D., S. Flagler and George Metzgar, directors.

A very good condition of business is reported from the works at Tyrone. The Tyrone Foundry & Machine Works are rushed with orders, and the Tyrone forges are being run regularly.

The Pennsylvania Steam Vehicle Company will in-

crease their capital stock, so that their factory at Carlisle may be enlarged because of growing business.

The Lebanon Valley Furnace of J. & R. Melly, at Lebanon, has been blown in.

The Cambria Steel Company have received an order for 500 steel cars from the West Virginia Central & Pittsburgh Railroad Company, and they will be built at Johnstown.

Our Copper Exports.

The following table from the report of the Bureau of Statistics shows the destination of the exports of copper ore, ingots and manufactures from the United States during the past three years:

<i>Exports of Copper.</i>			
	1899.	1900.	1901.
Copper and manufactures of:			
Ore: Exported to—			
United Kingdom, gross tons	1,173	5,882	13,681
Germany, gross tons....	2	300	25
Mexico, gross tons.....	2,572	3,702	5,644
Other countries, gross tons .....	.....	123	263
Total ore.....	3,747	10,007	19,613
Ingots, bars, plates and old:			
Exported to—			
United Kingdom, net tons	25,338	31,761	18,410
France, net tons.....	29,225	33,863	17,304
Germany, net tons.....	24,643	33,674	18,744
Other Europe, net tons.	43,549	68,724	41,657
British North America, net tons.....	493	808	689
Mexico, net tons.....	143	148	109
Other countries, net tons	23	8	214
Totals.....	123,414	168,986	97,127
All other manufactures.....	\$1,852,499	\$2,257,563	\$1,842,336

The quantities of copper sent to Holland and Belgium are unfortunately not specifically stated, so that it is impossible to judge of the exports which ultimately reach Germany, which takes nearly all the copper which is shipped to Holland and Belgium.

The Gathmann Gun.

WASHINGTON, D. C., February 4, 1902.—There will be published in a few days, by order of the Senate, the detailed report of the joint board of officers of the army and navy appointed under special act of Congress to make a series of comparative tests of the destructive energy of the so-called Gathmann torpedo gun and the 12-inch army service rifle. These tests were made at Sandy Hook against two similar targets representing the side construction of the latest type of battle ship, each structure being faced with a Kruppized armor plate 8 x 16 feet and 12 inches thick. The result, showing the superiority of the service rifle, has heretofore been announced, but the publication of the report, which has a comprehensive bearing upon the use of high explosives in heavy ordnance, has been delayed to await the reproduction of an interesting series of photographs of the tests at various stages. Following are the findings of the Board:

The results of these experiments give a fair illustration of the effect that can be produced by each system. The separate effect of each round and the accumulated effect of the three rounds from the army service rifle was, in each and every instance, superior to that from the Gathmann gun.

After a careful consideration of the effect of the various impacts on the respective targets of the Gathmann gun and the 12-inch army service rifle, the board finds that none of the impacts from the Gathmann gun would have endangered a modern battle ship; that the Gathmann system is not effective as a means of attacking armored vessels, and that any one of the shots from the 12-inch army service rifle would have wrought serious injury to a modern battle ship as regards its buoyancy, the interior mechanism, the armament and the personnel.

It may be said in this connection that the destructive effect of the 12-inch army service rifle surpasses any-

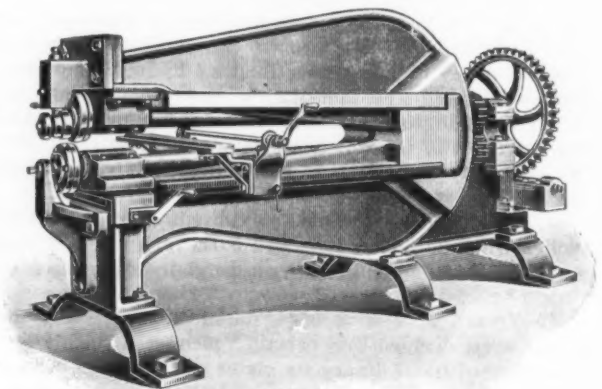
thing hitherto obtained from any gun, as far as this board has knowledge, or as the records show.

In considering the value of the two guns, not only must the destructive energy be taken into account, but their respective merits with reference to range and accuracy. From the experiments just completed it is found that the 18-inch gun, which fires the Gathmann projectile, has a velocity of less than 2000 feet per second. The army 12-inch rifle which was used in the test has a velocity of 2300 feet per second, and the latest type adopted by the War Department has a muzzle velocity of 2650 feet per second. Both in initial and sustained velocities the 12-inch army service rifle of both models is so far superior as to give at all ranges a very much greater probability of hitting, and the remaining velocity at 4 miles is sufficient to perforate the heaviest armor now being put on battle ships.

There is nothing in the Gathmann system to recommend its adoption in the public service of the United States, or to warrant further experiments. W. L. C.

The Ham Rotary Shears.

The rotary shearing machine built by L. M. Ham & Co. of Boston will cut, centrally, wrought iron or steel sheets 10 feet wide, up to ½ inch thick. The cutters are



THE HAM ROTARY SHEARS.

so supported on their shafts as to withstand the heaviest strain, and yet they may be readily removed for sharpening. They are vertically adjustable to act on varying thicknesses of metal, and means are provided for resisting the endwise thrust of the shafts tending to separate the cutters laterally. The machine has an adjustable gauge for regulating the width of the strip cut from the plate, and also an attachment for preventing the plate from being tipped up by the cutting pressure or retarded in its movement through the cutters. Power is applied through a worm gear and suitable reducing gears.

Our Exports of Steel Rails.

From the report of the Bureau of Statistics we extract the following table showing to what countries we have exported steel rails during the years 1899, 1900 and 1901:

<i>Exports of Steel Rails.—Gross Tons.</i>			
	1899.	1900.	1901.
Exported to—			
Europe	21,150	31,530	37,888
British North America.....	92,039	125,931	65,797
Central American States and British Honduras.....	1,102	1,667	5,046
Mexico	20,827	34,993	53,446
West Indies and Bermuda...	9,083	9,972	15,350
South America.....	7,943	20,462	52,569
Japan	5,151	44,654	17,364
Hawaii	9,111	5,971	.....
Other Asia and Oceania....	76,242	63,408	54,221
Africa	28,624	17,657	16,364
Totals.....	271,272	356,245	318,045

Since Hawaii is now a part of the United States, the exports since June 30, 1900, are no longer entered as exports to foreign countries.

The Ways and Means Committee and Representative Babcock.

WASHINGTON, D. C., February 4, 1902.—Representative Babcock of Wisconsin, who recently introduced a comprehensive bill providing for a reduction of the tariff rates on the metal schedule, made two unsuccessful attempts during the past week to have his bill favorably reported by the Ways and Means Committee, but on the second occasion he showed such unexpected strength in committee as to cause the majority leaders considerable uneasiness.

The first occasion on which Mr. Babcock's bill was discussed in committee was on January 30, at a special meeting summoned for the purpose of voting upon a bill to repeal the Spanish war revenue taxes. The Republican members of the committee, at a conference held the night before, had agreed to vote solidly for the revenue repeal bill and to oppose unanimously all amendments that might be offered. When the committee met, however, Representative Richardson, the Democratic minority leader, moved as a substitute for the revenue repeal bill a measure drafted by himself, abolishing the import duties on all trust made products. This motion was lost by a vote of 11 to 5, with one member of the committee absent. Mr. Richardson then moved that the Babcock bill be substituted for the war revenue bill, in the hope of forcing Mr. Babcock either to vote against his own measure or violate the agreement of the majority to vote down all amendments. There was no roll call in this motion and there are two versions of what followed. Mr. Babcock asserts that he voted for his own bill and that the vote if recorded would have stood 10 to 6, but the Republican members of the committee insist that he voted against the bill, presumably with the intention of observing his obligation to the caucus agreement.

The divergent reports concerning Mr. Babcock's vote upon his own bill proved so displeasing to the Wisconsin member that he determined to set them at rest by a formal vote. The opportunity for such a vote came yesterday morning, when the committee met to make a few verbal changes in the revenue repeal bill and to report it to the House. After the revenue bill had been disposed of Mr. Babcock promptly moved to report his metal bill with a favorable recommendation and demanded a formal roll call. There were but 13 members of the committee present, and when the roll was called Representative Tawney of Minnesota, a prominent Republican, caused considerable consternation among his colleagues by voting with Babcock for a favorable report. The four Democratic members present also voted for the bill, and the ballot therefore stood 7 to 6 against a favorable report. Hardly had the vote been announced before Representative Cooper, one of the Democratic absentees, appeared, and it was at once apparent that had he arrived a few moments earlier there would have been a tie vote. The other absentees were Representatives Hopkins and Long, Republicans, and Newlands, Silver Democrat. Newlands would have voted for the bill and Hopkins against it, but Long is claimed by both sides. Had he voted for the bill it would have been favorably reported. He is commonly regarded as a low tariff Republican, his constituency being the Seventh Congressional District of Kansas, and has openly expressed his approval of the pending Cuban reciprocity proposition. Efforts have been made by both friends and opponents of the Babcock bill to ascertain Mr. Long's position with regard to it, but thus far he has been very reticent. He was absent from the committee when the bill was voted upon yesterday, but will return in a few days. It is expected that Mr. Babcock will soon renew his attempt to secure a favorable report upon his bill, and Mr. Long's position with regard to it will therefore probably be fully developed within a short time.

Mr. Babcock's action in calling up his bill at yesterday's meeting of the Ways and Means Committee was very severely criticised by his Republican colleagues, several of them even going so far as to charge him with bad faith in repudiating the agreement of the committee to oppose all amendments and substitutes while the

revenue repeal bill was pending in committee. Mr. Babcock, however, declares that the agreement regarding substitutes and amendments applied only to the meeting of the committee on January 30, and, further, that if there was such an agreement in force at yesterday's meeting it was violated by the Republican majority, who made several changes in the revenue bill as originally presented. Mr. Babcock was openly threatened in the committee with a proposition to remove the tariff on lumber, which, it is assumed, would be very distasteful to his Wisconsin constituents, and it was also suggested that if his bill were brought forward again it would be amended by provisions repealing the duty on iron ore, coal and hides, all of which are unpopular propositions in Wisconsin. In reply Mr. Babcock states that he will continue to push his bill and that a measure of some kind reducing the rates on the metal schedule, if not exactly in the form suggested by him, will be passed by Congress. The majority leaders have no intention of permitting Mr. Babcock's bill to be seriously discussed and will exhaust every parliamentary device to prevent its consideration.

W. L. C.

Australian News.

Our Melbourne correspondent reports that the Maryland Steel Company have secured a contract for 6500 tons of rails for West Australia at £6 2d., c.l.f., Fremantle. There will be some heavy contracts for steel rails placed within the next 12 months, from present indications. In addition to Victorian requirements the colony of New Zealand, which at present is outside the commonwealth, has just authorized the expenditure of £400,000 for railway requirements.

Engineering shops are keeping fairly full of work, despite overlegislation. Still the conditions of the Factories' act are so stringent that one at least of our foundries is calculating to move, lock, stock and barrel to Birmingham, England, during the present year.

Harvesting machinery has been in good demand, principally for Queensland and the northern parts of New South Wales.

Tenders for the electric lighting of the city of Sydney are to be invited in London at once. A site for the generating station has been chosen at Pyrmont, Sydney, and no time is to be lost in completing the scheme. Various other electric lighting schemes are in hand throughout Australia and New Zealand.

W. Sandford, Limited, of Lithgow, New South Wales, have asked Enoch James, until recently manager of the Patent Shaft & Axle Tree Company of England, to advise with reference to the erection of a blast furnace plant. The work is not to be proceeded with pending certain tariff difficulties.

The Eight-Hour Bill.—WASHINGTON, D. C., February 4, 1902.—The House Committee on Labor, which for several weeks has vainly endeavored to assemble a quorum for the consideration of the eight-hour bill, finally succeeded in doing so on the 30th ultimo, but other measures having precedence, the Gardner bill was set for a special order on February 7. At the meeting held on January 30, Representative Caldwell of Ohio gave notice that he would present a resolution providing for two or three sessions of the committee each week until February 27, when the hearings should be considered as closed. The representatives of the iron and steel interests who were present demurred to this resolution on the ground that they had been ready to proceed with their arguments for several weeks, but had been unable to do so because of the committee's failure to secure a quorum, whereupon Mr. Caldwell stated that he would amend his resolution so that the hearings should close on March 6. It has therefore been arranged that the hearing shall occupy a total of eight days during the current month.

W. L. C.

The Troy Steel Company.—The referee's sale of the plant of the Troy Steel Company, at Troy, N. Y., advertised for February 6, has been postponed to a later date.

The Iron Age

New York, Thursday, February 6, 1902.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

The Future of the Eastern Iron Trade.

The conviction is gaining ground that there is much more vitality in the Eastern iron trade than it is generally given credit for by the trade at large. That conviction is based on a number of facts and upon developments likely to grow out of the evident trend of the industry.

Touching first upon the supply of raw materials, we have first that of cheap ores. Conspicuous, of course, is the famous Cornwall deposit of Bessemer ore, which can be mined as cheaply as any of the famous shovel propositions of the Mesaba range. It has the disadvantage of being lower in iron, of calling for roasting in order to get rid of the sulphur, and of carrying a considerable percentage of copper. With exploitation on a large scale the fixed charge represented by interest on purchase price is probably not much larger than are the royalties paid on the great part of lake ores. Then we have the Lake Champlain district, with its very cheaply mined rich ores of great variety, including Bessemer ores and ores suitable for producing basic pig and foundry grades. There, as in the New Jersey magnetite district, magnetic separation is beginning to effect important economies in cobbing and in subsequent separation. The roasting of magnetic ores with furnace gas, too, is proving an important aid to better furnace practice. It is pretty well demonstrated now that with modern plants pig iron can be made at a cost which renders the furnaces secure against the price of Southern or Western iron, delivered in the home markets of the East. Some of the Eastern ore interests assert, furthermore, that their position will be further strengthened when the duty is removed from foreign ore, while the open hearth steel works of the coast, the customers of the Eastern furnacemen, would be aided by a removal of the duty on scrap.

One element of weakness in the position of the Eastern iron trade has always been the supply of fuel. The cost of the haul on coke from distant coal fields is a serious item. It looks now as though modern developments in this branch would greatly favor all furnaces who suffer from high fuel cost. Of course the steady lowering in the coke consumption by better furnace practice tells constantly in their favor. But there is also the by-product coke oven, with the aid of which coke is made at practically the cost of the coal, the saving from the by-products paying for the operation of coking. The furnace fuel may also be supplied by independent by-product coke oven plants, built primarily to furnish illuminating gas to our large cities. We understand that the coke made at the gas works at Everett, near Boston, is being used successfully by a blast furnace on the Hudson River.

A further saving of fuel will grow out of the introduction of gas engines driven by waste blast furnace gas, and in this respect the Eastern furnaces have the advantage, since they are not likely to be any more seriously troubled with dust than are the plants on the Continent, where the utilization of furnace gas for power purposes

is now pronounced to be a technical and commercial success.

Assured of cheap pig iron, the foundry and steel making plants on the Atlantic Coast will be in a position to hold their own natural markets and to take an important part in the development of an export trade.

It will be observed that the possibilities are there and that developments are likely to strengthen rather than weaken the position of the iron makers of Eastern Pennsylvania, Maryland, New Jersey and New York. But it will take money, courage and hard work to realize the existing opportunities.

The Standardization of Iron and Steel Sections.

We learn from the London *Times* that the more or less nebulous efforts of nearly a quarter of a century to organize a movement for the standardization of iron and steel sections has at last taken shape in the appointment of a committee representing the Institution of Mechanical Engineers, the Institution of Naval Architects, the Iron and Steel Institute and the Institution of Civil Engineers to take steps in that direction. That this is a serious undertaking is indicated by the fact that the committee includes such well-known men in various lines as Sir Benjamin Baker, James Mansergh, Sir John Wolfe-Barry, Sir Frederick Bramwell, Sir Douglas Fox, E. Windsor Richards, G. Ainsworth, Prof. W. C. Unwin, Dr. J. H. F. Tudsbery and others of equal professional prominence.

This committee has already begun its work in accumulating a large amount of valuable testimony from manufacturers and engineers, both in Great Britain and in the colonies. The most encouraging fact thus far developed is that the opposition of the manufacturers which defeated the early efforts of Sir Joseph Whitworth to standardize screw threads no longer exists. The reason for that opposition was that if screw threads were standardized much of the repair business which came to the manufacturers of machine tools, by reason of the fact that they had exclusive taps and dies, would be lost to them. This was an exceedingly narrow view of the matter, but narrow views obtained more generally a generation ago than now. It overlooked the fact that the buyer of a machine resented a system which required him to pay perpetual tribute to the manufacturer, and that when opportunity offered to avail himself of machines with standardized parts he did so gladly, to the disadvantage of English makers and the upbuilding of their foreign competitors.

The great multiplication of patterns which exists in every department of the finished iron and steel trades of England is the natural outgrowth of the dependence of manufacturers upon the specifications of engineers, and their willingness that such dependence should continue, doubtless because after the first cost of meeting the vagaries of individual specifications was met their advantage in securing subsequent orders would be conspicuous. The theory was good, but it does not seem to have worked out in practice. The engineers have changed their specifications arbitrarily, and whether this has or has not been of advantage to them, it has certainly resulted in immense disadvantage to the manufacturers. For example, the committee has already made the discovery that in the item of heavy rails more than 171 different sections are rolled in the English mills, against 67 standard sections in Germany and 49 in the United States. Of tram rails there are upward of 70 different sections, although the service for which each section was specially designed is almost identical

with that for which every other of the 69 sections was designed. The committee is of the opinion that the widest possible range of tramway practice would be met by 15 or 20 sections.

In all kinds of structural material of iron or steel the same chaotic conditions are said to obtain. This more than anything else would seem to account for the difficulty which British manufacturers have experienced in competing for orders open to foreign makers. The lately published letter of Mr. Baird, Secretary of State for India, relating to the placing of orders for locomotives for the Indian State railways with other than British makers, shows very clearly why those dissatisfied with the loss of this business could not meet either the prices or the delivery conditions offered by their German and American rivals. One reason may perhaps be found in lack of enterprise, and another and better reason was that the British engine builders encountered a serious difficulty in getting materials quickly from the mills. They had an almost unlimited range of selection, but no standards and no stock to draw upon. The mills are so in the habit of working to finical specifications reflecting individual idiosyncrasies that they waited for them, and it would have taken the British locomotive builders longer to get the materials together than the German or American builders needed to construct the engines and ship them. The same is true of bridges and of ships.

Under these conditions it is impossible for the rolling mills to work cheaply or rapidly. In Germany and in this country the standardization of sections has reached a point at which it is possible for the mill manager to keep his trains busy the year 'round making just what the engineer needs in his work, and accumulating stock, when opportunity offers, for emergency orders. In England, on the other hand, we have the high authority of the *Times* for the otherwise incredible statement that every 20, 30 or perhaps 100 tons ordered from the mills has to be rolled to a slightly different shape. This not only involves the turning of an almost unlimited variety of rolls, but it entails great loss of time in changing rolls. Thus for each little order there is a capital expenditure as great as an American mill manager would feel warranted in incurring to secure an order of 3000 to 4000 tons. If the *Times* correctly reflects the English system, it is quite within the truth to say that no American mill of enough importance to be named in Swank's Directory could be run on that plan and not find itself in the hands of a receiver in less than six months. In a recent address before one of the English engineering societies Sir John Wolfe-Barry, speaking of the disadvantages of the present English system, said:

"A striking case of the money that is lost or wasted in this way occurred a short time ago where certain sections were specified in a bridge. When the contractor endeavored to obtain these sections, although they were contained in the price-lists issued by the makers, the makers themselves had none of the sections in stock and could not give delivery. The contractor, therefore, worked out a girder of similar strength, incorporating therein sections which could be readily obtained, and the saving on this item alone was over £600. One agent of acknowledged eminence, in his evidence, stated that 'he had known wagon sole bars objected to because they were 1-16 inch narrower in the width or in the flanges,' and he thinks engineers should take the nearest section in existence, and not hold out for so small a difference or insist on cutting rolls for new sections, which costs from £150 to £200. This one item alone often means the difference between securing or losing the contract. He also stated that, having taken a contract, the manufacturer has sometimes to spend a couple of hun-

dred pounds in getting a new set of rolls simply for the want of a standard. 'We have,' he said, 'made hundreds of rolls, and, speaking from the experience of 25 years, eight-tenths of the rolls we have cut have never been heard of again, and thousands of pounds have gone for the want of a standard. I know of works in Scotland spending £50,000 in rolls just now. They may be right or may be wrong with a lot of their sections, but they are doing it. Lately, for the sake of an Indian order, we had to supply channels 10 x 2¼ inches, and the only way we can get them is to take 10 x 3 inches and plane them down; that is a most expensive matter. We had a case where we had to plane a square bar of 3½ inch square section into an angle bar of 3½ x 2 x ¾ inch, and it had to be planed out of the solid. This was not to replace old work, but was for new order and new design.' He went on to state, 'That is what we have to do in our country; but this is what America does when you go to them. This is an inquiry I had last year for 1500 tons of 83-pound steel flange rails, 800 tons of steel sole plates to suit them and 66 tons of fish plates. The Illinois Steel Company, in reply to that, said, 'We can only quote upon our standard specifications in practice for this small lot.' That is a lot weighing 2366 tons.' In other words, 'You have to take our standard or go without them.'"

One of the witnesses who contributed to the testimony collected by the committee of the engineering societies said:

"I had to supply a quantity of material for a bridge to be built in one of our English colonies. Included was a shape which had never been rolled. The quantities were so small and the lengths so short that they were probably stiffening pieces, but it was insisted upon by the export merchant here that I should supply the exact section. They were angle irons. The average cost of material throughout the bridge was £8 10s. per ton. I made large pieces of angle iron by means of a blacksmith at a cost of £28 or £30 per ton."

The remedy for this condition of affairs, which is sufficient in itself to account for the unsatisfactory condition of the iron and steel trades and the engineering industries of Great Britain, lies wholly with the manufacturers. They can correct it if they will, and the very capable Committee on Standard Sections will undoubtedly point out the way. In its final report it will recommend what sections are needed to meet existing engineering requirements. If the manufacturers will adopt these and refuse to consider orders for odd dimensions unless placed in a large way or at amply compensatory prices the confusion will end quickly and completely. The present committee, when its important work is finished, will be succeeded by a permanent Standards Committee, before which, from time to time, evidence may be laid as to the need for any modification of or additions to the standards already adopted. The recommendations of this committee will be made public, so that any manufacturer who cares to turn rolls for the new pattern recommended may do so and thus stand on an equal footing with every other manufacturer. The plan is admirable, and if the manufacturers give it the co-operation it merits the whole situation will change for the better. No one concern in the business would probably consider it safe to promulgate a Declaration of Independence of the engineers, who have each been a law unto himself in the matter of shapes and sections, but this is really the easiest thing in the world to do if they will act together and follow the recommendations of the committee now at work for their advantage. Under the new system a new generation of engineers will arise, under whose leadership England may reason-

ably hope to regain some part of the ground she has lost through the vagaries of professional cranks. Our own manufacturers will to a considerable extent share in the benefit derived from educating the consumers to whom they expect to sell increasing quantities as the years roll by.

A Market Phenomenon.

The reported action of the steel manufacturers in deciding not to advance the price of soft steel bars emphasizes the peculiar conditions which now prevail in the iron and steel trades. Here we have the unusual spectacle of a meeting of manufacturers, undoubtedly called for the purpose of agreeing upon an advance, and with everything favoring such a decision, agreeing not to do so. It is a most unexpected position to take, as the trade had been prepared for the announcement of higher prices by the stiffening of quotations generally and by the increasing difficulty in finding manufacturers able to take orders for reasonably early delivery. It can safely be assumed, with no precise knowledge of the proceedings of this meeting, that the decision not to advance prices is due to the attitude of the largest manufacturers rather than to the conservatism of the rank and file. While this attitude is commendable for most important considerations, it is such a departure from the usual course of market events as to be noteworthy. It is, however, in conformity with a number of other occurrences during the past nine months in which prices of steel products have not been adjusted according to general expectation. They have not been marked up when conditions seemed to perfectly justify such a procedure,* and they have sometimes been marked down when but for such action they would have gone soaring. A new era, therefore, seems to have dawned. It is an era in which present profit is not considered so much as the cultivation and preservation of a sustained demand. The remarkable circumstance is presented, and indeed has for some time confronted us, of order books filled to overflowing, with finishing departments hungry for more material, while prices show little evidence of the existence of more than a fair demand.

This has caused the iron and steel market to be really stronger than it appears. Such a market phenomenon as this has been known before, but only for a brief time and not on any great range of products. In the early stages of a boom it is manifested, of course, but otherwise it has only occurred when temporary conditions restricted the supply of some particular commodity. Never before, during a period of absolute freedom from excited buying, has this phenomenon of extraordinary market strength existed to such a great extent as now obtains. In pig iron, bars and structural material particularly the published quotations of prices asked by manufacturers are for deliveries which are hopeless for the buyer who finds that he will shortly need additional supplies. In the steel rail trade the same prices are quoted as were current months since, but not a mill can be found in position to guarantee delivery before October. The strength of the rail situation is most convincingly shown by the prices now being paid for relaying rails. Such rails, partly worn, and usually sold at 25 per cent. less than new rails, are now worth the full price of new rails.

It is true that in a few lines, such as sheets and tubes, the multiplication of new mills has proceeded so rapidly of late that prices are not so strongly held. Taking the steel trade as a whole, however, the volume of business now in progress is so great that when weakness does develop in one branch it is not likely to become acute

but will speedily correct itself. This was the case in wire products. What happened in that line is likely to be repeated in the others. The general volume of business is so large, and has been so well sustained by the policy of maintaining reasonable prices, that the supply of raw materials is not running in excess of the demand and therefore they are not cheapening in price. This keeps up the general cost of manufacture and prevents the slaughter of values in any branch in which the product may appear to be exceeding the demand. High cost and low selling price are not conducive to serious attacks on the market. A great balance wheel is thus in operation, which checks a boom.

The Consumption of Foundry and Mill Iron.

Somewhat interesting figures develop when Mr. Swank's official figures of pig iron production for 1901 are studied more closely. We have repeatedly dwelt on the fact that if once the market for pig iron was the barometer of the iron trade, that function has now narrowed down to one branch of it, foundry pig iron, the reason being that it is not influenced by any great consolidations. The sellers are numerous, and are represented in every producing district of importance, while the buyers number certainly over 4000, and are scattered over the country from Maine to California.

Mr. Swank gives full details of the production of pig iron which enters into the manufacture of steel. To add output of Bessemer, basic and manganiferous pig practically yields the total of such requirements, although, of course, a certain amount of Bessemer pig does go to foundries which cast ingot molds and which produce malleable castings. Still, that does not vitiate the method of arriving at the quantity of foundry and mill iron produced in the country by deducting from the total output the aggregate quantity of the steel making pig irons.

The total production of pig iron which was used in steel manufacture is as follows:

Pig Iron Used in Steel Manufacture.—Gross Tons.		
	1901.	1900.
Bessemer pig.....	9,596,793	7,943,452
Basic pig.....	1,448,850	1,072,376
Spiegel and ferro.....	291,461	255,977
	11,337,104	9,271,805
Total production pig iron.....	15,878,354	13,789,242
Foundry and mill iron.....	4,541,250	4,517,437

It will be observed that the quantities used for foundry and for puddling increased very little in 1901 over 1900. In fact, even that apparent increase would disappear were the fact taken into consideration that all the exports practically consist of this grade. Since they declined from 286,687 tons in 1900 to 81,178 tons in 1901, or 147,500 tons, it would appear as though the foundry and forge consumption had actually fallen off. As against this we must note the fact that stocks of unsold pig iron in the hands of manufacturers declined from 372,560 tons to 70,647 tons, or 301,913 tons, the bulk of which, of course, belongs to these grades. Probably the amount of puddling was larger this year than last. Unfortunately we have no data on this, so that we cannot tell absolutely what the foundry consumption proper amounts to. But the fact is quite clearly shown by the statistics that the consumption of foundry iron in 1901 was very little greater than it was in 1900.

We have figured the statistics of the semiannual periods in the same manner with the following results:

Pig for steel making.		Foundry and mill iron.	
Gross tons.		Gross tons.	
First half 1900...	5,191,361	2,451,208	
Second half 1900...	4,080,444	— 1,110,917	2,066,229
First half 1901...	5,363,212	+ 1,282,768	2,311,401
Second half 1901...	5,073,892	+ 610,480	2,229,840
			— 81,552

The striking fact is the relative steadiness of the production of foundry and mill iron, as revealed in the second column. In the second half of 1900 the production of steel making pig dropped 1,100,000 tons, while the decline in foundry and mill iron was only about 385,000 tons, or about one-half the quantity. In the first half of 1901 the former had jumped back 1,287,000 tons, while the addition to the other group was only 250,000 tons. The second half of 1901 added 610,000 tons more when the production of foundry and mill iron actually declined 82,000 tons. In other words, the production of foundry and forge irons is remarkably uniform when compared with the output of pig iron for steel manufacture, which is truly the "jumping jack" of the iron trade.

Modern Machine Methods.—I.*

BY H. F. L. ORCUTT, LONDON.

There is a rapidly increasing tendency to minimize hand labor and to reduce manufacturing to purely machine operations by the aid of accurate tools and fixtures combined with properly adapted machines. Admitting this, it follows that the lines on which manufacturers will work in the future will mainly be in the direction of perfecting methods of machining.

It is with respect to machine operations, where accuracy combined with cheapness of product is secured, that this paper deals, contrasting modern developments with those methods where accuracy is secured only by laboriously expensive hand work, or where machine work is performed on tools of comparatively simple design, unaided by highly developed tools, fixtures and gauges. It is not, however, assured that automatic machine operations are invariably more economical than hand work, as doubtless many a sadder and wiser manufacturer who has invested in complicated expensive machines can testify. It is, however, beyond dispute that the producing power of the individual, aided by the labor saving automatic machine, is practically unlimited, while we have long since reached the limit of production of the skilled worker, making use of only simple machines and hand tools. A high degree of accuracy is possible by either the old or the new method; but accuracy combined with cheapness is only possible under new conditions, while interchangeability is commercially impossible except in those establishments fitted with the best machines, tools and gauges.

Strictly speaking, there are few, if any, mechanical operations that may be called new since the time when the planer and milling machine superseded the chisel and the power lathe and the drilling machine replaced the bow stick. Turning, milling, planing, grinding and boring are as "old as the hills." It is the latter day developments of these operations in which the progressive manufacturer is interested, developments which have practically taken place within the last 20 years, some of them within the last five years. It is proposed to touch briefly upon the different methods in respect to the latest practice only, and to finally deal with the workshop reforms which in some cases follow, and in others must precede, the introduction of new methods before such methods can be successfully adopted.

Gauges.

It is altogether too commonly supposed that the extensive use of accurate gauges is only economical where either highly accurate work is called for or parts are to be made in large quantities. Neither supposition is correct. In nine cases out of ten where even only one piece is concerned, that piece can be produced more cheaply and better with the aid of proper gauges than by the old-fashioned methods of fitting, or by measuring with micrometers or calipers. There will be the additional advantage of pieces being practically interchangeable. Again, where comparatively coarse work, as, for instance, in some parts of a loom, is permissible, the use

* A paper read before the Institution of Mechanical Engineers.

of suitable gauges is desirable, for the reason that, no matter how loose the fits may be, they are necessary to save work in erecting, to secure interchangeability and to keep sizes within certain limits. All this can be accomplished by means of the limit gauge, whether used for large or small dimensions, for inside or outside work, or for running or driving fits. Although the limit gauge in certain forms has been in use for years, particularly among gun and small arm makers, it is surprising how little its advantages and use are known and understood by manufacturers for every day work of all sorts. It is impossible to enumerate or describe the various forms of limit gauges which can be adopted in nearly all engineering works, but manufacturers will find the subject well worth investigation.

When the advantages of working with limit gauges are better understood the system is sure to be extensively adopted for general engineering purposes, and limit gauges will supersede, except in a few cases, the ordinary standard plug and ring gauges. Even where the best gauges of the ordinary sort are used, work is in reality finished within certain limits. When only standard gauges are used, however, these limits are never known; dimensions are made in accordance with the skill, judgment or experience of the workman. With the limit gauge system it is only necessary to determine what the allowable limits are to be and to then make use of a maximum and minimum gauge, by which sizes are kept within the prescribed limits. With these gauges comparatively unskilled labor will—aided by the proper outfit—quickly learn to produce work accurate within limits of 0.0006 inch when using the external limit gauge and within limits of 0.0016 inch when using the internal limit gauge. These limits are none too close for a large percentage of ordinary engineering work and close enough for interchangeability, even in fine machine work. The adoption of limit gauges is in itself desirable, but, of course, the most economical results cannot be secured without also giving consideration to the outfit of machines and tools. It does not follow that grinding is necessary either for inside or outside work. The above limits can be kept to either in lathe or screw machine work, and holes can be finished in steel, brass or cast iron with reamers.

It is an erroneous idea to suppose that because comparatively rough work is in question comparatively rough gauges are good enough. This may be true, as in the case of working gauges for unfinished material, but it will be rarely found profitable to follow this principle where machined surfaces are to be dealt with. Carefully finished hardened gauges, accurate to within 0.0001 inch, are none too good where working surfaces are in question. A finer degree of accuracy than this is not demanded, except in comparatively small work, as, for instance, in tools connected with the manufacture of watches. It is proved that 0.0001 inch is a limit to which hardened gauges can be made without too great an expense. It is desirable not to go below this degree of accuracy for working gauges—never in the case of standards—as errors multiply rapidly, and four or five times this limit means that in many cases work must be rejected.

The following Table I of limits given is one which is adapted to a large range of work:

Table I.—Internal and External Limit Gauges.

Limits of tolerance expressed decimally in inches.

Internal Limit Gauges			Total limit of variation.
Diameter of holes. (Nominal.)	Go in.	Not go in.	
¼ to 13-32 inch.....	— 0.0004	+ 0.0004	0.0008
7-16 to 11-16 inch.....	— 0.0006	+ 0.0004	0.0010
¾ to 1-16 inches.....	— 0.0006	+ 0.0006	0.0012
1¼ to 1½ inches.....	— 0.0008	+ 0.0006	0.0014
1 15-16 to 2 15-16 inches..	— 0.0008	+ 0.0008	0.0016
3 to 4 9-16 inches.....	— 0.0010	+ 0.0008	0.0018
External Limit Gauges, for running fits.			Total limit of variation.
Diameter of shafts. (Nominal.)	Go on.	Not go on.	
¼ to 13-32 inch.....	— 0.0004	— 0.0010	0.0006
7-16 to 11-16 inch.....	— 0.0006	— 0.0012	0.0006
¾ to 1-16 inches.....	— 0.0008	— 0.0014	0.0006
1¼ to 1½ inches.....	— 0.0010	— 0.0018	0.0008
1 15-16 to 2 15-16 inches..	— 0.0012	— 0.0020	0.0008
3 to 4 9-16 inches.....	— 0.0014	— 0.0024	0.0010

External Limit Gauges, for keying fits.			
Diameter of shafts. (Nominal.)	Go on.	Not go on.	Total limit of variation.
$\frac{1}{4}$ to 13-32 inch.....	+ 0.0004	— 0.0002	0.0006
7-16 to 11-16 inch.....	+ 0.0004	— 0.0002	0.0006
$\frac{1}{2}$ to 13-16 inches.....	+ 0.0004	— 0.0002	0.0006
$1\frac{1}{4}$ to 1 $\frac{1}{2}$ inches.....	+ 0.0004	— 0.0004	0.0008
1 15-16 to 2 15-16 inches..	+ 0.0004	— 0.0004	0.0008
3 to 4 9-16 inches.....	+ 0.0004	— 0.0004	0.0008

Light Milling.

The field of operation for the milling machine has materially widened within a comparatively short time. Improvements in design and increased skill in the manipulation and care of tools are the two factors mainly responsible for its success. It has largely displaced the planer and shaper; it produces highly finished and accurate surfaces, and makes substantial savings in hand labor; it is designed with a view to adaptability in making short runs. In many cases it is found profitable to set up a machine for a run on ten or a dozen parts. Stability and quickness of manipulation are the chief characteristics of the modern milling machine as compared with those of older design. Wherever it can be adopted it usually scores over the planer or shaper as a labor saver, for the reason that in nearly all cases it can be served by unskilled attendants, who can keep from two to four, and even six, machines in operation; while with the planer or shaper it is not very often the case that one operator can advantageously attend more than two machines.

There are three essentials to economical results in milling: 1. Up to date machines. 2. A not too niggardly supply of good milling cutters and tools. 3. Good tool makers who know how to keep machines and tools in the best of condition.

The following may be mentioned as a few of the most interesting milling operations which are not as widely adopted as they will be when their advantages are better understood.

The vertical milling machine or, what amounts to the same, the horizontal machine performing operations with the end mill, produces in many cases very satisfactory results, both in speed and accuracy. There is a good variety of excellent machines, both of the vertical and horizontal type, now on the market for this class of work. A most valuable machine, comparatively little used, is a combined vertical and horizontal machine with long table. For taking roughing cuts with fast feeds inserted tooth cutters with Mushet blades give good results.

Circular Milling.

The circular mill, either on simple or complicated forms, effects great savings and one attendant can keep six machines in operation. It can also be run in connection with other milling machines, reducing costs in many cases 50 per cent. and 75 per cent., and competing with the best turning machines in accuracy as well as in costs of operation. On castings with a chemical composition suitable for change gears, pulleys, hand wheels and similar parts, circular milling is accomplished with the cutter running at a surface speed of over 50 feet per minute and work feeding 4 inches per minute on the periphery.

One of the simplest and most effective methods is neglected to an astonishing degree, even by those who have large milling equipments—that is, taking a roughing and then a finishing cut, not hurrying the machine too much on the finishing cut. The milling machine is too often regarded as a means for merely removing metal instead of as an instrument for producing accurately finished surfaces where little or no hand work is necessary. In many cases five minutes more on the machine would make a saving of ten minutes' fitters' work, files would be saved and greater uniformity secured. It should not be forgotten that the wrongly designed, badly made, rarely sharpened milling cutter largely assists in keeping the milling machine in disrepute, when otherwise it might rise to the rank of a valued ally.

The adoption and profitable use of the milling machine is often impossible on account of the lack of exact knowledge as to the composition of cast iron, and for want of proper treatment of castings for the removal of sand and scale. A large percentage of castings which are used could be soft if cupola mixtures were properly

regulated. This would allow fast speeds and feeds for the milling cutters, without breakages or too much wear, instead of the comparatively slow planer cuts where castings are hard. There is little comprehension of how much the want of laboratory work stands in the way of the adoption of the milling machine. The pickling of castings alone makes it possible to increase the product of milling and planing machines, saves cutting tools, and consequently makes good work easier. Milling in many cases easily reduces costs 100 per cent, when compared with planing.

Heavy Milling.

The anticipated annihilation of the planing machine is not yet a reality, as some milling machine enthusiasts have from time to time predicted, and for heavy work the honors are now fairly well divided between the miller and the planer. Where rough but comparatively true surfaces only are required, what is known as the rotary planer turns out remarkably cheap work. It has the advantages of requiring little attendance and of turning out work two or three times faster than the planer; the cutters used are mostly of the inserted teeth pattern with self hardening steel. Another profitable use to which the heavy mill has been put is in "roughing out" work, particularly on castings which are to be accurately finished afterward on the planing machine. The author has known cases where this operation effected a saving of 75 per cent. in time. The rate of feed which can be commonly made use of varies from 2 to 6 inches per minute. One particular case which he has in mind as an illustration of profitable milling is that of roughing out lathe beds. The cutter is perhaps 23 inches wide, and removes from $\frac{1}{4}$ to $\frac{1}{2}$ inch of metal with a feed of about $3\frac{1}{2}$ inches per minute, the peripheral speed of cutter being about 45 inches per minute. Lathe beds are roughed out in this manner at about a fourth or a third of the labor cost when done on the planer. In this case the beds are afterward allowed to stand about two weeks to "season," then a light finishing cut is taken by the planer, and then they are ready for being scraped. The regularity of cut varies, of course, with the material, whether it is hard or soft, accurate to size or not, or whether sand has been thoroughly removed from castings. Pickling and compositions of castings, of course, largely affect the possibilities of heavy as well as of light milling. Splendid results of heavy milling are attained by taking roughing and finishing cuts; surfaces of complicated shape up to 20 to 24 inches in width are finished outright on the heavy mill, and are then ready for being scraped. Good gains are made over the planer, in some cases even when on short runs. Cutters are sometimes expensive, even costing £25 and £30, often more, but they are good investments as labor saving tools. The variety of heavy milling machines now on the market is large, so that good selections can be made for all classes of work. The adoption of the milling machine is not as extensive as it should be, for the reason that often an apparently formidable investment in cutters is necessary. The milling cutter, however, should be looked upon as any other labor saving tool. It is not so much a question of how much does it cost, as how much does it save, or how much does the article cost which it turns out.

The annual conference to arrange the wage scale in the bituminous coal mines in Indiana, Illinois, Ohio and Pennsylvania began at Indianapolis, Ind., January 30. This is always an interesting conference, as it settles the wages of thousands of miners in the four States named. This year's gathering is of greater importance than usual, as the miners have made a demand for a 10 per cent. advance on last year's scale, and the possibility of a disagreement is considered more than likely. It is, of course, to be expected that the conservative element among both the miners and the operators will do everything possible to secure a satisfactory settlement. The heavy demand for coal caused by the activity of manufacturing interests and the general prosperity of the country has kept the bituminous mines operating to their full capacity for a long time, and the miners undoubtedly feel that if they are not entitled to an advance in wages at the present time they can never hope for more favorable conditions.

PERSONAL.

R. R. Richardson, superintendent of the ore docks of the Carnegie Steel Company, at Conneaut, Ohio, accompanied by 20 of the heads of departments and assistants, was in Pittsburgh last week and inspected the plants of the Carnegie Steel Company, at Duquesne and Homestead.

M. D. Farnum, for a number of years with A. B. Pitkin Machinery Company, Providence, R. I., is now representing in New England Chandler & Farquhar, dealers in machine tools and supplies, Boston, Mass.

J. Norman Shearer has succeeded A. K. Reese in charge of the Pennsylvania Steel Company's furnaces at Lebanon. Mr. Shearer is a graduate of the Pennsylvania State College, and has been connected with the blast furnace department of the steel company at Steelton and at Harrisburg.

Frank B. Smith, secretary of the Crucible Steel Company of America, at Pittsburgh, has bought a large residence in Sewickley, Pa.

George G. McMurtry, president of the American Sheet Steel Company, and F. S. Cobeeler have been elected directors of the Rock Island Railroad.

A. Beard, manager of Midland Works of the American Sheet Steel Company, Muncie, Ind., has been appointed division superintendent, the Piqua Works of same company, at Piqua, Ohio, having been placed under his charge.

John Stephens, superintendent of the Midland Works, has resigned his position and will be connected with the Inland Steel Company, which concern will build sheet mills at Indiana Harbor, Ind.

W. H. Lewis, who recently resigned the position of superintendent of the New Castle plant of the National Steel Company to take the superintendency of the Sharon Steel Company, at Sharon, has been elected a director of the Sharon Steel Company.

F. H. Buhl, the Sharon retired iron manufacturer, is on his way to Cuba on a pleasure trip.

Samuel McDonald, who recently resigned as superintendent of the Bessemer plant of the Republic Iron & Steel Company, at Youngstown, Ohio, was presented by his former employees with a gold watch, chain and charm. Mr. McDonald will go to California for a long rest.

J. G. Butler, Jr., the well-known iron manufacturer, has been appointed solicitor of Youngstown, to receive contributions for the McKinley Memorial Fund.

W. A. Cornelius, who has been the general superintendent of the National Rolling Mill, Monongahela furnaces, steel works and the Boston Iron and Steel Works of the National Tube Company, in McKeesport, has been promoted to the Board of Directors to be assistant general manager of these plants, or next in authority to General Manager G. G. Crawford. The promotion dates from January 1, 1902. Mr. Cornelius was formerly connected with the Carnegie Steel Company.

Joseph Forker, a member of the Spearman Iron Company of Sharon and president of the Sharon National Bank, has resigned the presidency of the bank on account of ill health.

Hon. James S. Frint of Sharon, a director of the Sharon Steel Company and Internal Revenue collector for the district of Western Pennsylvania, with office in the Pittsburgh Government Building, has been quite ill for some time past and has been taken to Chicago to undergo an operation. He is the president of the Frint & Ohl Hardware Company, at Sharon.

S. H. Waddell, secretary-treasurer of the Union Steel Company since their organization several years ago, has resigned to accept the offices of assistant to President Thomas Lynch of the H. C. Frick Coke Company, and vice-president of several of the subsidiary coke companies of the United States Steel Corporation. Mr. Waddell has been identified with the coke business for over ten years, and will assume his new duties with Mr. Lynch at the offices of the H. C. Frick Coke Company, Carnegie Building, Pittsburgh, February 1.

William A. Carr, president of the Union Trust Company, at Pittsburgh, has tendered his resignation to take

effect February 1, and has accepted a confidential position with Henry C. Frick, whose interests will occupy the entire nineteenth floor of the Frick Building in Pittsburgh.

Charles A. Herald, manager of the wire rope department of the B. Greening Wire Company, Limited, Hamilton, Ont., has completed the course in electrical engineering with the American School of Correspondence, Boston, Mass.

H. A. Johnson has resigned his position as traveling salesman for the Crucible Steel Company of America to accept a similar position with the Colonial Steel Company of Pittsburgh, Pa. Mr. Johnson's headquarters are now at 36 La Salle street, room 610-612, Chicago, Ill.

Joseph P. Battles has resigned as agent and treasurer of the Lewiston Machine Company, Lewiston, Maine. Mr. Battles is succeeded as treasurer by Seth D. Wakefield and as agent by Superintendent Foster of the company.

The return of Robert H. Illingworth, manager of the Crucible Steel Company's plant, at Harrison, N. J., from a business trip to England, was marked by a banquet tendered to him last week in Newark by the employees of the company and a number of personal friends. Mr. Illingworth was also presented with a silver table service of 125 pieces and a crystal centerpiece.

The retirement of B. H. Warren from the second vice-presidency of the Westinghouse Electric and Mfg. Company of Pittsburgh has brought about the following changes in the organization of that concern: Frank H. Taylor, fourth vice-president, becomes second vice-president; L. A. Osborne, manager of works, becomes fourth vice-president; Arthur Hartwell, manager of the Chicago office, becomes sales manager, and Philip A. Lange, general superintendent, becomes manager of works.

E. G. Rust, formerly chief engineer of the Colorado Fuel & Iron Company's Works, at Pueblo, Col., has been appointed general superintendent. Mr. Rust has been succeeded as chief engineer by A. H. Helander, formerly chief draftsman.

W. R. Hay of Naylor, Benzon & Co., iron and steel merchants, London, sailed for home to-day.

A. R. Whitney, Jr., of New York is in Nassau recovering from illness.

Joseph R. Hawthorne, lately connected with Bement, Miles & Co., Philadelphia, Pa., has been appointed superintendent of the William Sellers & Co.'s, Incorporated, shops, at Philadelphia, Pa.

A "shop meeting" of employees of William Sellers & Co., Sixteenth and Hamilton streets, Philadelphia, Pa., was held on February 1, when John Sellers Bancroft, for 16 years superintendent of the works, was presented with a beautiful tea set, with a mahogany chest. Mr. Bancroft has resigned to take a responsible position with the Lanston Monotype Company. Complimentary addresses were made by Coleman Sellers, Jr., William H. Thorne, Joseph Kimes, A. E. Outerbridge and Strickland L. Kneass, who presided. Mr. Bancroft entered the Sellers concern in 1861 as an apprentice, was made general foreman in 1866, admitted to the firm in 1873, and upon the incorporation, in 1885, was elected manager of the works and power plant.

W. P. Snyder of the Shenango Furnace Company, and Major Geo. A. Laughlins of Jones & Laughlins, Limited, will sail on Saturday for the West Indies and Mexico, and will be gone about a month. They will probably be joined in Florida by Henry W. Oliver, who is now at Palm Beach, and who expects to accompany them.

W. Y. Humphreys of Humphreys, Stuart & Co. and president of the Bessemer Coke Company of Pittsburgh, has gone to the West Indies.

H. A. Zeller of Pomeroy, Ohio, has been appointed superintendent of the Schonthal Iron & Steel Company of Cumberland, Md.

Andrew Carnegie will on February 6 present the Laboratory of Engineering, given by him to the Stevens Institute of Technology, to the trustees of that institution.

H. C. Frick of Pittsburgh has been elected a director of the Franklin National Bank of Philadelphia.

MANUFACTURING.

Iron and Steel.

S. V. Huber & Co., consulting engineers, Ferguson Building, Pittsburgh, are drawing plans for the new plant of the Algoma Tube Company, at Sault Ste. Marie. Much of the machinery for this plant is being furnished by the United Engineering & Foundry Company of Pittsburgh.

The annual meeting of the stockholders of the Sharon Steel Company, Sharon, Pa., was held last week and the following additional directors were elected for terms of three years each: George Flinn, Peter Shields, Pittsburgh, and John Fahalline, Sharon. The directors organized by electing George W. Darr, New York, president; John Stevenson, Jr., vice-president; V. M. Delamater, Sharon, secretary, and David Adams, Sharon, treasurer.

The New Castle Forge & Bolt Company held their annual election of officers and directors a few days since. Frank Ryman was re-elected president, and all the other officers and directors were re-elected, as follows: Hon. J. Norman Martin, secretary, and H. B. Whieldon, treasurer; directors, Frank Ryman, W. H. Cox, J. Norman Martin, A. B. Whieldon, C. J. Kirk, T. F. Morehead and John C. Roberts. W. H. Cox was elected vice-president. The machinery is now being placed.

A lodge of the Amalgamated Association has been organized among the employees of the Eleanor Iron & Steel Company, at Irwin, Pa. The plant of this concern was recently started in the manufacture of skelp and merchant bars.

The Lorain Steel Company of Lorain, Ohio, are making shipment of 1200 tons of steel rails and 50 tons of special work to New Zealand, for use by the Auckland Electric Tramways Company, Limited, which concern are controlled by the British Electric Traction Company, Limited.

R. S. Warner of Columbus, Ohio, who has been identified with various iron and steel enterprises, is at the head of a movement for the establishment of a steel casting foundry, plate, bar and angle mill, blast furnace and a pottery in close proximity to the works of the Rarig Engineering Company, in that city. The land has been optioned by A. K. Rarig of the Rarig Engineering Company for the purpose of locating the plants, and the purchase will be made at once. The location is most favorable for manufacturing purposes, having four steam railroads, Pittsburgh, Cincinnati, Chicago & St. Louis, Baltimore & Ohio, Toledo & Ohio Central, and Columbus, Sandusky & Hocking; also an electric street car line, giving transfers to all parts of the city.

The Ironton, Ohio, *Register* of recent date gives some data in regard to the industries at Ironton, as follows: The Union Iron & Steel Company's furnace was in operation from July 9 to January 1: made 16,000 tons of iron and paid out in wages \$21,916.17. Sarah Furnaces produced 39,871 tons of iron and distributed about \$152,000 in wages. Hamilton Furnace produced 42,160 tons of iron. Hecla Furnace has not been in operation during the year. Lawrence Furnace operated steadily with an average output of about 38 tons daily, except a shut down from May till November. Vesuvius ran a good part of the year, making 7 tons of charcoal iron daily. The Eagle mill produced 14,142 tons of muck iron and scrap bar, and 14,442 tons of finished iron, and distributed \$158,199.50 in wages. The Foster Stove Company made 256 heats, with a total of 1123 tons, in 1900, and 236 heats, with a total of 1125½ tons, in 1901. The sales for 1901 were 10 per cent. greater than for 1900.

Rockhill Furnace of the Rockhill Iron & Steel Company, of which Walter Wood of Philadelphia is president, is being offered for lease. The furnace is equipped with coke ovens and 12,000 tons of ore are on the bank.

The statement is officially denied that the American Steel Hoop Company, Carnegie Building, Pittsburgh, have recently made a shipment of steel hoops to India. This concern have not recently exported any steel hoops on account of the large domestic demand.

The Cadwallader Tin Plate & Metal Company of Pittsburgh were chartered under the laws of Pennsylvania on January 29 with a capital of \$50,000. G. A. Cadwallader is president and general manager, and F. H. Good secretary and treasurer. The directors are G. A. Cadwallader and F. H. Good, Samuel Hunt and H. S. Loughry. The concern will start at Hazlewood a tin plate dippery, with at least two stacks and probably three. They will maketerne plate, and expect to be in operation early in March.

The Sharon Steel Hoop Company, Sharon, Pa., advise us that they have under consideration the matter of building an open hearth steel plant and additional finishing mills, but have not as yet come to a definite decision in the matter.

The Midland works of the American Sheet Steel Company, at Muncie, Ind., have been much improved during the past six months, and other improvements are under way. A new trimming house is being erected and the plant is being equipped with special machinery for the manufacture of high grade sheets. The plant is now operated almost entirely on specialties.

The Riter-Conley Mfg. Company, of Pittsburgh, builders of iron and steel structural work of all kinds, are filling contracts for 30 steel tanks for use on a sugar plantation in San Salvador and two petroleum tanks for the Hawaiian Islands.

The Union Steel Company of Pittsburgh will soon place contracts for the building of two blast furnaces, 12 50-ton open hearth steel furnaces and all other necessary accessories. Some large steel structural buildings will also be erected to accommodate the open hearth and other departments.

The plant of the Hartman Mfg. Company, at Ellwood City, Pa., manufacturers of wire nails and wire, and which has been closed since the concern went into the hands of receivers, has again been started up by the Union Trust Company, who are acting as receivers for the concern.

The new tube mill of the Labelle Iron Works, at Steubenville, Ohio, has been put in partial operation. It is expected the entire plant will be started this month.

Some important improvements and new additions to equipment will be made in the Brown-Bonnell Works of the Republic Iron & Steel Company, at Youngstown, Ohio. It is intended to make this one of the most complete plants owned by the Republic Company. It is also intended to increase the capacity of the Bessemer Works at the Brown-Bonnell plant to about 1200 tons a day.

The Sheffield Rolling Mill Company, Sheffield, Ala., have resumed operations at their plant after some weeks of partial inactivity, during which time extensive repairs and additions have been made. The company will now take up the manufacture of cotton ties.

The Illinois Steel Company now have all their blast furnaces in operation with the exception of one stack at South Chicago, one at the Union Works and one at the North Chicago plant. These three furnaces are out for repairs, and may be expected to be blown in in the near future. The coke situation is growing easier and the question of fuel is not so serious as it has been.

Hagar & Sons are building a rolling mill at Granite City, Ill., for the manufacture of bar iron, which is expected to be in operation early in the present month.

The Continuous Rail Joint Company of America, Newark, N. J., are contemplating the erection of a rolling mill in that city. They have plans prepared for a complete mill and are seeking options on land with shipping facilities. About 30 acres will be required for buildings, tracks, &c. At present the manufacturing is done at Troy, N. Y., and near Chicago. Robert Gray, Jr., president, and Frederick T. Fearey, treasurer, have the matter in charge.

At the annual meeting of the Pacific Steel Company, held at Jersey City, the following directors were elected: H. H. Swaney and M. J. Carrigan of Port Townsend, Wash.; Maurice McMicken and William Piggott of Seattle, Wash.; Captain John Irving of Victoria, B. C.; Timothy O'Connor of Merrill, Wis.; J. M. Hawthorne of St. Paul, O. F. Thomas of New York City, Frederick P. Day of Jersey City, J. C. Smith, E. P. Douglass and J. L. Devenney of McKeesport, Pa. The directors elected these officers: H. H. Swaney, president; Maurice McMicken, vice-president, O. F. Thomas secretary and M. J. Carrigan treasurer. The company operate a blast furnace at Irondale, Wash.

Graham Furnace, at Graham, Va., has been blown in to run on basic pig iron.

The Crescent Works of the American Tin Plate Company at Cleveland will undergo extensive improvements. A new annealing and cold rolling department will be added and the annealing furnaces now in use will be replaced by a single large furnace and the capacity of the finishing department will be largely increased. Work will be started on the improvements during the coming week and while it is under way the annealing and cold rolling departments of the works will be idle.

General Machinery.

The Supplee Steam Engine Company, Columbia, Pa., are now putting in an upright port drill for drilling large pipes, 36 inches in diameter, from 4 to 12 feet long. They have work on hand that will keep them engaged about three months.

Went Brothers, Findlay, Ohio, manufacturers and wholesalers of plumbers' water, gas and oil well supplies, have purchased the property formerly occupied by McManus & Seymour, manufacturers of rakes, which they will convert into a machine shop. The firm will enlarge the plant by the erection of a store room and offices and in connection with the machine department will carry a complete line of mill, engineers' and plumbers' supplies. No new equipment of importance is required.

The J. G. Duke Machine Works, Memphis, Tenn., manufacturers of saw mill machinery, oil well machinery, engine lathes and transmission machinery, have incorporated under the same name.

Very little new equipment will be required by the Insinger Company, machinists, Philadelphia, Pa., for their new shops, as they will move their present plant into the new buildings as soon as they are completed. Plans are prepared and call for a two story brick machine shop, 50 x 125 feet, and boiler house, 20 x 29 feet.

W. H. Divine & Co., Capron, N. Y., recently organized by W. H. Divine and George Ireland, have secured the building, 40 x 110 feet, formerly occupied by the Capron Knitting Company, and now have their plant in partial operation, making buffing and polishing wheels.

The Stillwell-Bierce & Smith-Valle Company, Dayton, Ohio, have secured an order for 1000 horse-power outfit of turbine water wheels, to be installed in an electrical plant at Santos, Brazil.

It is probable that the power house of the City Electric Railway Company, La Salle, Ill., which was recently destroyed by fire, will be rebuilt.

The Orono Pulp & Paper Company of Bangor, Me., have purchased water power on the Stillwater branch of the Penobscot River, about three miles from their plant at Basin Mills, where they will erect a 1000 horse-power electrical power plant.

The American Foundry & Machine Company of Cleveland, who were recently incorporated with \$200,000 capital stock, have organized with the following officers: C. H. Lane, president; W. W. Wallace, vice-president; C. H. Marr, secretary-treasurer, all of Cleveland. Through the efforts of L. A. Smart, a Cleveland attorney, the company have obtained a bonus from the town of Ravenna, Ohio, and are erecting a plant in that place on the site of the old American Window Glass factory. The site consists of 8 acres on the Pennsylvania tracks. For the present the buildings will consist of a main foundry building 125 x 72 feet, machine shop 130 x 88 feet, and a power house. They will produce a line of mining machinery, and beside producing their own castings will do custom work in this line. They have contracted for a portion of their equipment, but they are on the market for boilers, generators, several planers, lathes, a 10-foot boring mill and other tools. W. W. Wallace, who will be superintendent of the plant, was for 15 years superintendent of the factory of the American Clay Working Machinery Company. The mining machinery produced will be largely of his invention.

The Springfield & Xenia Traction Company, having headquarters at Springfield, Ohio, will erect a car barn and repair shop at Enon Station. The building will be 74 x 160 feet, of brick and steel construction. Considerable machinery will be installed in the shop.

Boilers, Engines and Accessories.

The Southwark Foundry & Machine Company of Philadelphia have received the order for the three large engines to drive the trains of the rail mill which is being built by the Dominion Iron & Steel Company of Sydney, C. B.

The Niles Boiler Company, Niles, Ohio, have just finished erecting what is said to be the largest oil tank in the world, at Marcus Hook, near Philadelphia.

The A. W. Burritt Company, Bridgeport, Conn., are considerably enlarging their power house. All equipment has been purchased.

The Page Boiler Company, Norwich, Conn., will build an addition to their plant. All equipment has been bought.

The Water Works Trustees of Wyoming, Ohio, will receive bids up to February 9 for furnishing and erecting one compound duplex direct acting pumping engine of 1,500,000 gallons capacity against a total head including friction of 200 feet; one open feed water heater of 150 horse-power, together with necessary pipes, valves, fittings, &c.

T. A. Steel, president of the Board of Trustees of Cuyahoga Falls, Ohio, will receive bids up to February 19 for furnishing and installing an alternating current generator of capacity of 90 to 120 kw. and a horizontal medium or high speed engine of not less than 200 indicated horse-power.

Bids will be received up to March 1 by W. T. Pupkofer, Village Clerk, South Brooklyn, Ohio, on engines, boilers, generators and other necessary equipment for a municipal lighting plant. Plans and specifications are in the hands of C. N. Smith, E.E., South Brooklyn.

Foundries.

The Keystone Stove Foundry, Spring City, Pa., recently organized with a paid up capital of \$60,000, have secured the plant formerly operated as the Schuylkill Valley Stove Company, and are now ready to furnish all repairs and stoves formerly made by the latter.

The S. Obermayer Company, Cincinnati, Ohio, with branch factories at Chicago, Ill., and Larimer, Pa., state that the year 1901 has proven to be the banner year in the sales for foundry facings, supplies, &c., and the prospect for the current year, judging from the orders already in hand received during the month of January, bids fair to exceed any similar period in the history of their business. The company have recently established a branch at Pittsburgh, Pa., which will be operated in direct connection with the plant at Larimer, Pa. This move is an especially important one, as it places them in much closer touch with a territory of trade than heretofore enjoyed.

The Crown Foundry Company, Adam Ehret, proprietor, Belleville, Ill., will build an addition, 50 x 75 feet, to the foundry recently purchased. They expect to start up by the middle of the present month.

The Wilkes Foundry Company of Toledo, Ohio, have been incorporated with \$25,000 capital stock by Charles T. Wilkes, Thomas Davies, Wm. E. Brown, George M. Kinney, and M. J. Riggs. Plans for a foundry building 400 x 300 feet have been completed. Erection of the plant will start at once, and the company expect to have it in operation by May 1. The equipment will be very complete, and castings of all kinds will be produced.

The Browning Engineering Company of Cleveland, who erected a large plant near Collinwood last summer, are contemplating increasing their facilities by the erection of a large foundry.

Bridges and Buildings.

The National Iron & Wire Company, Cleveland, are preparing to erect a structural and bridge shop in connection with their plant. The building will be 50 x 170 feet, and two stories high. The framework is to be of steel.

The Ritter-Conley Mfg. Company of Pittsburgh have contracted for the erection of a brick and steel building for the Standard Plate Glass Company, at Butler, Pa., to be 520 feet long and 140 feet wide.

Fires.

Fire recently did \$3000 damage to Burgher Brothers' machine works, at Delafield, Wis.

The iron and spring bedstead factory of George Gale & Sons, Waterville, P. Q., was destroyed by fire January 30. Loss, \$100,000; partially insured.

The main building of the Bridgeport Wood Finishing Company's plant, at New Milford, Conn., was destroyed by fire February 3. The loss is estimated at \$100,000.

The plant of the Chandler & Price Company, Cleveland, Ohio, manufacturers of printing presses and other printing machinery, was damaged by fire January 31. The loss is estimated at about \$25,000.

Fire did \$10,000 damage to the plant of the Danielson Machine & Tool Company, Cleveland, Ohio, recently.

Two buildings of the Allston Foundry Company, Boston, Mass., were recently destroyed by fire. The loss may reach \$10,000.

The two upper stories of the machine shop at the John Roach ship yard, at foot of East Ninth street, New York City, were gutted by fire last week. Loss is about \$3000.

The Fiber Specialty Works, Kenneth Square, Pa., were destroyed by fire February 3. The loss is about \$40,000, with \$15,000 insurance.

The plant of the Tygart Valley Mfg. Company, Morgantown, W. Va., was destroyed by fire recently; the loss on building and machinery is about \$6000.

The plant of the Staten Island Clay Company, manufacturers of fire brick, at Woodbridge, N. J., was destroyed by fire Jan. 29. The damage to buildings and machinery is about \$50,000.

The Bettendorf Axle Company, manufacturers of steel wagon axles, railway trucks, &c., Davenport, Iowa, suffered a loss of \$100,000 in the partial destruction of their plant by fire on January 28. The company will probably save much of the machinery. They have lost the power plant and part of the machine shop, as well as the designing room containing many patterns. The reconstruction of the plant will proceed at once.

The Dauchy Iron Works, 84 to 90 Illinois street, Chicago, architectural foundrymen, suffered the loss of their plant by fire on January 30. The loss was \$14,000, covered by insurance.

F. M. Marsluf & Co.'s shoe factory at Janesville, Wis., was destroyed by fire February 4. The loss will reach \$80,000.

The plant of the Hayward Narrow Fabric Company, at Fall River, Mass., was destroyed by fire February 4. The loss is \$25,000, with partial insurance.

Hardware.

The Clipper Lawn Mower Company, Incorporated, Norristown, Pa., have let the contract for the erection of their new plant at Main and Franklin streets, in that city. The main building will be of brick, 150 x 40 feet and two stories in height. This when completed will enable them to largely increase the capacity of their present plant. The matter of machinery installation for the new factory will, we are advised, be taken up at an early date.

The New Freedom Wire Cloth Company, New Freedom, Pa., who were established in November, 1900, have from the first done a successful business. They have shipped to every State and Territory in the Union but Alaska, their foreign trade including Canada, Cuba, the countries of South America, Mexico, Honolulu, Australia, and the East and West Indies. They are now working to full capacity. Originally there were two buildings in the works, one 160 x 130 feet, and the other 190 x 50 feet, having a total of 100 loom machines. Another building was added last fall, 83 x 50 feet, having 50 loom machines. All the machinery is of the most modern character, and includes four patents, the invention of William F. Kintzing, superintendent of the company. The president of the company is A. L. Norrish, treasurer, F. C. Kugler, and secretary, Dr. J. F. Lutz. The directors include the president and superintendent, with W. H. Burnham, A. N. Hetrick and J. S. Freeland.

G. R. Lynch, who has been general manager of the Chattanooga Steel Roofing Company, Chattanooga, Tenn., for 11 years, has resigned to accept the management of the Aurora Acetylene Company, manufacturers of Aurora acetylene gas generators. They have one of their machines on exhibit at Charleston, S. C., which is attracting much attention, we are told. The Steel Roofing Company grew rapidly under the management of Mr. Lynch, and is now one of the largest manufacturing concerns in Chattanooga. On Mr. Lynch's retirement the employees presented him with a very handsome silver tea set.

Mr. Sewell Sanders, who has been general manager of the Chattanooga Plow Company, Chattanooga, Tenn., has entered into the manufacture of disk plows for himself, and has gotten his patterns all in order and is now in the trade. He is making his plow at present at the plant of the Chattanooga Car & Foundry Company. Mr. Sanders is well known in the plow trade, having grown up with the Chattanooga Plow Company.

The Dixie Plow Company, Chattanooga, Tenn., who have been manufacturing the Dixie Reversible Disk plow for the past year, are now organizing a company with \$50,000 capital paid in to enlarge their business. They have placed this plow on royalty with some Western and Southern manufacturing concerns.

The machinery and other stock in trade of the Iron Clad Paint Company, Cleveland, Ohio, have been purchased by the Cleveland Facing Mills Company, which is operated by the J. D. Smith Foundry Supply Company. The outfit will be moved from the old plant of the Iron Clad Paint Company, on Seneca street, to the facing mills plant on Carter street, which will be enlarged to accommodate it.

Southern Indiana Powder Company have been incorporated with a capital stock of \$50,000, and will manufacture gunpowder, blasting powder and other explosives in Pike County, near Petersburg, Ind., with headquarters in Evansville. Jabez Woolley, Jr., is president, and Geo. W. Hardy secretary and treasurer.

A company is in process of formation at Franklin, Pa., for the purpose of manufacturing a ratchet wrench invented and patented by M. J. Lennard.

Fred. E. Thomas, formerly of Brewer, Me., has removed his fishing rod manufacturing business to Bangor.

Miscellaneous.

The annual meeting of the stockholders of the Standard Underground Cable Company of Pittsburgh was held in that city last week. The total stock represented in person and by proxy was 12,635 shares of a total of 15,000 shares. The total business of the company for the year was \$3,339,673, and dividends paid aggregated \$150,000. The total surplus now stands at \$517,337, the same having more than doubled in two years. The company used during the past year over 3,200 tons of copper wire and 6300 tons of lead in the manufacture of insulated wires and cables. The former Board of Directors was re-elected—viz., Mark D. Watson, James H. Willock, John D. Nicholson, John Moorhead, Jr., Robert Pitcairn, J. N. Davidson, John B. Jackson, B. F. Jones and J. W. Marsh. The board will probably meet on Friday of this week, when the present officers will be re-elected, as follows: Mark W. Watson, president; Joseph W. Marsh, vice-president and general manager; Frank A. Rinehart, secretary and treasurer; Charles H. Hagen, auditor.

The ten elevators in the Frick Building, Pittsburgh, will be provided with air cushions, made by Ellithorpe Safety Air Cushion Company of New York. A test of the safety of these devices will be made on these elevators in a short time.

The Utah Light & Power Company, Salt Lake City, Utah, propose to construct an earth core wall dam in Ogden Canyon, Utah, at an approximate cost of \$250,000 for the dam and \$100,000 for the reservoir site. It is contemplated that the work will be begun and prosecuted to a finish during the year 1902.

The plant of the Youngstown Car Mfg. Company, Youngstown, Ohio, has been closed indefinitely. The concern will likely wind up their business and their property will be sold for a manufacturing site.

The Champion International Company, Lawrence, Mass., who are a consolidation of the Russell mill of the International Paper Company of that city and the Champion Card & Paper Company of East Pepperrell, will shortly begin the construction of a large coating mill, second to none in the world, plans for which are now being prepared by Dean & Main, engineers, 53 State street, Boston, Mass.

William Wirt Clarke & Son, builders' supplies, Baltimore, Md., have been awarded the contract for supplying the City of Baltimore with all iron rock vitrified street paving blocks and vitrified sewer pipe required for 1902. This is the second year that they have secured the contract for sewer pipe. The firm are now under contract to supply materials to the Department of Public Parks and Electrical Subway Commission of Baltimore, War Department in Washington and Navy Department at League Island, Philadelphia, Brooklyn, Norfolk, Va.; Mare Island, Cal., and Cavite, P. I.

The Smith Mfg. Company, Waynesboro, Pa., have had their new manufactory upon which they entered last May running to

its fullest capacity ever since, and have contracts secured that will keep them fully engaged up to May 1. At present they are making \$25,000 worth of galvanized ice cans for the Frick Company, Waynesboro, Pa., and \$3000 worth for the Crystal Ice Company, Kansas City, Mo.. They have also a number of other smaller contracts that will totalize \$30,000.

The Stover Mfg. Company, Freeport, Ill., held their annual meeting on January 27 and elected the following list of officers: D. C. Stover, president; A. S. Held, vice-president; W. A. Merrill, general manager, secretary and treasurer; O. J. Ziegler, general superintendent; W. A. Hance, superintendent of machinery; J. M. Irwin, superintendent of agencies. The year 1902 opens auspiciously for the company, the demand being greater than ever for their line of windmills, grinding mills, &c. The new factory which has been building during the past year is now ready to occupy, and the transfer of the stock and machinery will be made the first week in February. When settled in the new quarters the company will have the best possible facilities for the manufacture of windmills and grinding mills, and at least three times greater capacity than in the past.

The Kellogg-Mackay-Cameron Company, wholesale dealers in heating supplies, covering the entire Western country, have closed arrangements for the Clow Building at Lake and Franklin streets, Chicago, and will occupy it about March 1. The firm's business has outgrown the present quarters at 110 Lake street, and they will utilize the ample space in the seven-story building above mentioned, where everything required in the steam and water heating business will be carried in stock, including boilers, radiators, pipe, fittings, brass goods, &c.

H. O. Wilbur & Sons, cocoa and chocolate manufacturers, 235-241 North Third street, Philadelphia, have bought the properties 220-234 New street, which adjoin the northeastern end of their present plant. With this addition they propose to enlarge their present factory by 40,000 square feet of floor space, and the work will be commenced as soon as the plans are ready.

The S. P. Wetherill Chemical Company of Philadelphia, who have for a year past been operating a chemical works in New Castle, using acids from one of the tin plate plants, will soon erect a large paint works at New Castle, to use the copperas made by their chemical plant.

The Columbus Insulated Wire & Brass Company, Columbus, Ohio, have, with the aid of the Columbus Board of Trade, secured a 7-acre site and will erect three factory buildings, giving an aggregate floor space of 50,000 square feet. Work will start as soon as weather permits. The first structure will comprise a brass rolling mill and rod, sheet and tube mills. These will be in operation by January 1, 1903. As soon as they are in running order it is stated that three other buildings will be erected for the manufacture of brass novelties.

Ohio C. Barber of Barberton, Ohio, has presented that town with a proposition for supplying water, electric lights, gas for fuel and light and artificial ice. He proposes that the town issue bonds in the sum of \$300,000 to guarantee the building of a plant to have 3000 horse-power; 1000 horse-power to go for the production of the utilities mentioned and the remaining 2000 horse-power to be sold to local plants at actual cost, to induce new industries to locate there. The plan would place all public utilities except street cars under public control.

The Kirk-Latty Mfg. Company of Cleveland have increased their capital stock from \$75,000 to \$150,000. F. W. Kirk is president. It is understood that they are preparing to go into the manufacture of automobiles.

The Cleveland Yaryan Company of Cleveland have been incorporated with \$100,000 capital stock by Ryerson Ritchie, W. F. Carr, S. F. Haserot, J. J. Sullivan and E. W. Doty, prominent residents of that city, to install a heating system for private residences in the East End of the city. It will be operated by means of hot water forced from a central plant under the system which has been introduced in a number of cities by H. T. Yaryan of Toledo. The company have applied to the City Council for a franchise, and if obtained, one, and perhaps two, plants will be erected and placed in operation by November.

The Born Steel Range Company of Cleveland, leading manufacturers of steel ranges, are contemplating the erection of a large plant. An option has been obtained on a large building site in Newburg, near Cleveland, and the matter of erecting the plant is in the hands of a building committee, who are not yet prepared to announce their decision. If the new plant is built, the present large factory at Brooklyn will become a branch works.

The stockholders of the Pittsburgh Valve, Foundry & Construction Company at their annual meeting January 27 re-elected the old Board of Directors, consisting of President Henry M. Atwood; J. T. Speer, vice-president; Moses Atwood, secretary; Charles A. Anderson, treasurer, and R. J. Wilson. No financial statement was made public, but it was stated that the company had done splendidly during the year. No new improvements are contemplated, as the company completed their new foundry and machine shop on Twenty-sixth street some time ago. The offices will be moved to the works.

The Iron and Metal Trades.

The situation is becoming more and more strained and perplexing, owing entirely to the phenomenal demand which is now dealing with the tonnage of the second half of the year, the capacity for the first six months being taken up in the principal lines. In the stricter sense of the word, there is no evidence of speculation, but it is, of course, difficult to judge to what extent the freer buying of consumers for the distant future is warranted by known requirements.

A good many of the larger interests have been buying freely of Pig Iron for the second half. We are advised of one lot of Foundry Iron of 10,000 tons for the Chicago district. There have been purchases of round blocks of Basic Pig in St. Louis and elsewhere, with an inquiry for 10,000 tons from Indiana for the second half. There has been some very heavy buying of Charcoal Iron by car wheel works, a large share of it going to Southern furnaces. There is a large inquiry in the market from Cast Iron Pipe founders, which has only been satisfied to a moderate extent. While prices are not quotably higher because large interests note no change, as a matter of fact the market has advanced, and one leading Lehigh company have put up their prices. While some weeks since sellers were willing to make some concessions for delivery during the second half, they are now demanding and getting full prices.

The Steel market is in a very unsatisfactory state for the smaller rolling mills. It is true that the leading interests have been looking into the question of importing Steel, but we cannot learn that anything has been done. Further sales of foreign Steel Billets have taken place and negotiations for additional quantities are pending. The markets abroad have hardened and German Billets are now being quoted at 82 to 83 shillings, f.o.b. Antwerp, the price here having been correspondingly advanced to \$28.50, ex-ship. One point is worthy of consideration in this connection, and that is it will take only a moderate further advance abroad to cause a higher duty to be placed on foreign Steel. When the valuation is 1c. per lb. or less, the duty is 0.3c. per lb. Above that it rises to 0.4c. per lb.

Strong light is thrown upon the condition of affairs in the Steel Rail trade by the fact that a leading Southern road has found it impossible to secure the required delivery on a block of about 25,000 tons and is now looking seriously into the question of importing at least 10,000 tons of foreign Rails.

There has been some talk of bringing back from Europe, duty free, Foundry Iron sold last year. So far as we can learn the quantities available of American Iron in stock in Europe are very small.

On the question of maintaining values for Finished Material at the present level, the action of two of the Eastern Beam mills is significant. Although members of the Beam Association, they have advanced prices \$4 per net ton to 1.95c. per lb., New York.

Copper has had a soda water rise, from which there has been a drop in the last few days. Lake now stands at 12½c., which is more reasonable than either 11c. or 13½c., which was reached temporarily.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type Declines in Italics.

	Feb. 5, 1902.	Jan. 29, 1902.	Jan. 8, 1902.	Feb. 6, 1901.
PIG IRON:				
Foundry Pig, No. 2, Standard Philadelphia	\$17.00	\$17.00	\$16.50	\$15.25
Foundry Pig, No. 2, Southern, Cincinnati	14.75	14.75	14.25	13.25
Foundry Pig, No. 2, Local Chicago	16.00	16.00	15.50	14.50
Bessemer Pig, Pittsburgh	16.75	16.75	16.75	13.50
Gray Forge, Pittsburgh	16.00	16.00	16.00	13.00
Lake Superior Charcoal, Chicago	20.00	19.50	19.25	18.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	28.50	28.50	27.00	19.75
Steel Billets, Philadelphia	29.50	29.50	....	21.00
Steel Billets, Chicago	35.00	35.00	32.50	20.75
Wire Rods, Pittsburgh	28.00	28.00	28.00	26.00
Steel Rails, Heavy, Eastern Mill	2.00	2.00	2.00	1.50
Spikes, Tidewater	1.60	1.60	1.65	1.30
OLD MATERIAL:				
O. Steel Rails, Chicago	15.00	15.00	14.75	12.00
O. Steel Rails, Philadelphia	19.00	18.50	18.25	15.50
O. Iron Rails, Chicago	22.00	22.00	21.00	17.00
O. Iron Rails, Philadelphia	21.00	21.00	21.50	18.00
O. Car Wheels, Chicago	16.50	16.50	16.00	16.50
O. Car Wheels, Philadelphia	17.00	17.00	17.00	17.00
Heavy Steel Scrap, Chicago	14.00	14.00	13.50	12.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.67	1.67	1.65	1.40
Common Iron Bars, Chicago	1.75	1.75	1.65	1.45
Common Iron Bars, Pittsburgh	1.60	1.50	1.50	1.30
Steel Bars, Tidewater	1.62	1.62	1.70	1.38
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.25
Tank Plates, Tidewater	1.78	1.78	1.78	1.55
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.40
Beams, Tidewater	1.75	1.75	1.75	1.63
Beams, Pittsburgh	1.60	1.60	1.60	1.50
Angles, Tidewater	1.75	1.75	1.75	1.53
Angles, Pittsburgh	1.60	1.60	1.60	1.40
Skelp, Grooved Iron, Pittsburgh	1.75	1.70	1.70	1.45
Skelp, Sheared Iron, Pittsburgh	1.80	1.75	1.75	1.50
Sheets, No. 27, Pittsburgh	3.00	3.00	2.90	2.85
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh	2.05	2.00	2.00	2.30
Cut Nails, Mill	1.95	2.05	2.05	2.05
METALS:				
Copper, New York	12.50	11.75	11.75	16.87½
Spelter, St. Louis	3.90	4.10	4.12½	3.77½
Lead, New York	4.10	4.10	4.00	4.37½
Lead, St. Louis	4.00	4.00	3.90	4.17½
Tin, New York	24.25	23.50	22.50	26.35
Antimony, Hallett, New York	8.00	8.00	8.25	9.25
Nickel, New York	50.00	50.00	60.00	55.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	4.19	4.19	4.19	4.19

Chicago.

FISHER BUILDING, February 5, 1902.—(By Telegraph.)

Nothing has occurred to unsettle values or to shake confidence in the stability of the market. Business is heavy in all lines in which any buying is to be expected at this time of the year. The influences now potent are more clearly in the direction of encouraging consumption than checking it. Although the volume of business is so good that supplies are short, yet the largest manufacturers are endeavoring to keep prices from rising any higher, and this is having a good effect through the trade.

Pig Iron.—The demand is strong for all kinds of Iron and for all kinds of deliveries. Some large contracts have been placed for Foundry Iron, running through the year. The inquiry is excellent for Gray Forge and a great deal of business could be done if furnace companies were prepared to promise deliveries earlier than July. It is believed that at least 10,000 tons of Basic Pig Iron have recently been sold here, and it is now quoted at \$17.65. Lake Superior Charcoal continues in active demand at higher prices for malleable purposes. Prices of Foundry Pig Iron could be readily advanced, but sellers are conservative and are endeavoring to discourage the least indication of boom conditions. Spring Valley Furnace at Spring Valley was being blown in this week to make Coke Foundry Iron. The Minerva Furnace at

Milwaukee is nearly ready for blowing in and will probably be started about March 1. We quote as follows:

Lake Superior Charcoal.....	\$20.00 to \$21.00
Local Coke Foundry, No. 1.....	16.50 to 17.00
Local Coke Foundry, No. 2.....	16.00 to 16.50
Local Coke Foundry, No. 3.....	15.50 to 16.00
Local Scotch, No. 1.....	16.50 to 17.00
Ohio Strong Softeners, No. 1.....	19.50 to 20.00
Southern Silvery, according to Silicon.....	16.90 to 17.15
Southern Coke, No. 1.....	16.40 to 16.65
Southern Coke, No. 2.....	15.65 to 15.90
Southern Coke, No. 3.....	15.15 to 15.40
Southern Coke, No. 1 Soft.....	16.40 to 16.65
Southern Coke, No. 2 Soft.....	15.65 to 15.90
Foundry Forge.....	14.65 to 14.90
Southern Gray Forge.....	14.65 to 14.90
Southern Mottled.....	14.15 to 14.65
Southern Charcoal Softeners, according to Silicon.....	15.50 to 16.50
Tennessee Silicon Pig.....	17.15 to 17.65
Alabama and Georgia Car Wheel.....	20.65 to 21.65
Malleable Bessemer.....	18.00 to 19.00
Standard Bessemer.....	18.25 to 20.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	18.50 to 19.00

Bars.—The price of Soft Steel Bars officially remains at the old figure of 1.65c., Chicago, as the minimum for mill shipment, but most buyers are obliged to pay considerably higher than this minimum. Both Iron and Steel Bars are in strong demand and in some instances the contracts placed have run into heavy tonnages. Mill shipments of Common Bar Iron are quoted at 1.75c. to 1.80c., Soft Steel Bars at 1.65c. to 1.80c. and Hoops at 2.10c. to 2.20c. Jobbers are having an extraordinary demand for shipment from stock and report that almost everything in transit from the mills is pre-empted before it gets here. Small lots from stock are quoted at 1.90c. to 2c. for Bars and 2.40c. to 2.50c. for Hoops.

Structural Material.—The City Council on Monday evening repealed the ordinance limiting the height of fire proof buildings, and now a large number of office buildings will speedily be placed under contract. The new store building of Hibbard, Spencer, Bartlett & Co. has been let during the week. It will take 3500 tons of Steel and 1500 tons of Castings. No new structural undertakings can secure delivery of material from the mills for several months, as they are fully sold up. The local architectural yards are running bare of stock. Large orders are being placed for such stock for deliveries beginning in July. Angles are at present almost unknown in local stocks. Such scarcity has, perhaps, never before been seen here in any Iron or Steel commodity. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.05c.

Plates.—The local trade is rather light at present, but manufacturers' agents whose business extends over a wide territory report a moderate improvement in their sales. A fair trade is reported by the jobbing houses. Prices are unchanged. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c. to 1.95c.; Marine, 1.95c. to 2.05c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—Sales agents are enjoying a good demand for all classes of Sheets, and the independent mills are now advancing their prices, thus making the market firmer. The mills are in most cases oversold and it is difficult to secure prompt deliveries. Mill shipments of No. 27 Black Sheets are quoted at 3.05c. to 3.15c., Chicago, and small lots from store at 3.35c. to 3.45c. Galvanized Sheets are selling at 70 and 2½ to 70 and 5, with occasionally a lower price being made.

Merchant Pipe.—Some improvement is noted in the demand, and independent mills are less aggressive, so that trade generally is in better condition. No great volume of business is expected until the spring trade opens, which will be some weeks hence. Carload lots are now quoted as follows, random lengths: Black, ¼ to ½ inch, 60 off; ¾ to 10 inches, 67 off; Galvanized, ¼ to ½ inch, 47 off; ¾ to 6 inches, 55 off.

Boiler Tubes.—It is understood that the manufacturers recently held a meeting and that harmony rules in this branch of the trade, keeping prices firm. Business is fair. Quotations are as follows:

	Steel.	Iron.
2½ to 5 inches.....	57½	47½
1½ to 2½ inches.....	50	40
1 to 1½ inches.....	35	30
6 inches and larger.....	52½	45

Cast Pipe.—A very good tonnage is now being booked in small lots. Western cities are not yet buying to any extent, but are expected to enter the market soon with their specifications for the season's requirements. Quotations on Water Pipe, Chicago, are as follows: Eight-inch and upward, \$26 to \$27; 6-inch, \$26.50 to \$28; 4-inch, \$27.50 to \$29.

Merchant Steel.—The inquiry is good for the season, but no large buying is expected until later in the spring. Heavy specifications are being received against contracts. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.90c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.20c. to 2.35c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 to 60 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted 6½c. to 7c. for mill shipments; specials, 12c. upward.

Rails and Track Supplies.—Standard Sections are the subject of some inquiry, but no business of importance has been booked the past week. A 25,000-ton inquiry from Canada could not be entertained by Western mills on account of delivery. Light Rails are in good demand and prices are a little higher. Heavy Sections are quoted at \$28 and Light Sections at \$32 to \$36. Fastenings are quoted as follows: Splice Bars, 1.70c. to 1.80c.; Spikes, 2c. to 2.10c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

Billets.—Sales of Open Hearth Forging Billets are reported at \$33.50 for July delivery and \$35 for shipment a little earlier. Some large inquiries are in the market for Bessemer Billets, but little hope is entertained that they can be placed with any Western mill.

Old Material.—Prices are well held, but on rolling mill material the market is quiet, as buyers are not disposed to pay the rates now asked, being fairly stocked for the present. Cast Scrap is cheap in view of the strength of the Pig Iron market. Malleable Cast is a little higher. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$22.00 to \$22.50
Old Steel Rails, mixed lengths.....	15.00 to 15.25
Old Steel Rails, long lengths.....	21.00 to 21.50
Heavy Relaying Rails.....	27.00 to 28.00
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	14.00 to 14.50
Mixed Steel.....	11.50 to 12.00

The following quotations are per net ton:

Iron Fish Plates.....	\$17.00 to \$17.50
Iron Car Axles.....	21.00 to 22.00
Steel Car Axles.....	18.00 to 18.50
No. 1 Railroad Wrought.....	16.00 to 16.50
No. 2 Railroad Wrought.....	14.00 to 14.50
Shafting.....	16.00 to 16.50
No. 1 Dealers Forge.....	13.50 to 14.00
No. 1 Bushing and Wrought Pipe.....	11.50 to 12.00
Iron Axle Turnings.....	12.25 to 12.50
Soft Steel Axle Turnings.....	10.50 to 11.00
Machine Shop Turnings.....	11.00 to 11.50
Cast Borings.....	6.00 to 6.50
Mixed Borings, &c.....	5.75 to 6.00
No. 1 Boilers, cut.....	11.00 to 11.50
No. 2 Boilers, cut.....	10.00 to 10.50
Heavy Cast Scrap.....	12.00 to 12.50
Stove Plate and Light Cast Scrap.....	9.00 to 9.50
Railroad Malleable.....	13.00 to 13.50
Agricultural Malleable.....	11.75 to 12.25

Metals.—The continued advance in Copper stimulates the demand, and transactions would undoubtedly be heavy if buyers were able to secure what they desire. Lake Copper is now quoted in carload lots at 13½c. to 14c., and Casting brands at 13½c. to 13¾c. Pig Lead is maintained at 4.05c. for Desilverized and 4.15c. for Corroding in 50-ton lots. Old Copper and Brass are in continued strong demand, with dealers holding for higher prices. Heavy Cut Copper could be sold at 12c. to 12½c. and Copper Bottoms at 11c. Small lots of Pipe Lead are quoted at 3.75c. and Zinc at 3c.

Coke.—While foundrymen can get a full supply of Coke, it is not of the best quality, the receipts here now comprising a great variety of unknown brands. Shipments from Connellsville are not much greater than a month since. Prices on spot Coke fluctuate daily, sales being reported at \$5 to \$5.50. Strictly Standard 72-hour Connellsville Coke is held at \$5.25 for contracts.

The American Malleable Iron Company, whose works are at Chicago Highlands, Ill., have removed their general offices from the Chamber of Commerce Building to the Marquette Building, Chicago.

Philadelphia.

FORREST BUILDING, February 4, 1902.

The complicated condition of the Iron and Steel trades appears to have become more intensified during the past week. Pig Iron is more scarce and prices are unsettled to an extent that makes it impossible to give very close quotations. It is a little singular, however, that in the more advanced products an easier feeling is developing (except Structural Shapes), and deliveries are not as hard to get as they were some time ago. The explanation may, perhaps, be found in the fact that although the production of Bars, Plates and Sheets is considerably larger than it has been heretofore, a great deal of the material used is Scrap of various kinds, so that the proportion of Pig Iron required is not as great as it was in former times; but whatever the cause, the fact remains that the scarcity is greater in Pig Iron than in any other article on the list. Prospects of a betterment of conditions are by no means encouraging, and there is some reason for fearing that the recent exceedingly bad weather will add to the difficulty of transportation, which is still inadequate to meet the requirements for prompt deliveries of fuel and other furnace materials. A very nervous market may therefore be expected for some time to come; indeed, it is difficult to see how it can be otherwise so long as there is a daily struggle to secure enough material to go on with. Apart from the increasing evidences of a shortage in Pig Iron, there are no specially new features. The general run of business keeps up astonishingly, and the only anxiety that is expressed at the present time is to find ways and means of carrying it to completion. Prosperity within moderate limits has not been an exceptional experience in this country, but there never was a time that will bear comparison with the present for its scope and universality, and from present appearances it is likely to continue indefinitely.

Pig Iron.—The only point in regard to which there is uniformity of opinion is that metal is scarcer than it has ever been. It is scarce everywhere, but more scarce at the heaviest consuming points than anywhere else. The scarcity is not confined to any particular grade of Iron, as all grades are equally scarce, and this being the case, it naturally follows that prices are irregular and practically unquotable at close figures. Circumstances are so varied that a price made to one buyer may be a dollar more or a dollar less than it would be to another; yet if all the conditions were stated, either or both would be equally fair, circumstances considered. With this understanding it may be said that No. 2 X Foundry ranges from \$16.75 to \$17.50, the former figure for deliveries as soon as possible, but without any promise as to date, the latter figure for February and March, strictly guaranteed. Even these figures are liable to change at short notice, but for the time being they are precisely as stated. The outlook is certainly not encouraging for those who look for lower prices, neither do makers of Pig Iron regard with satisfaction the probability of higher prices, so that the immediate course of the market depends entirely upon the day to day happenings, and what these may be it is impossible to say with any degree of certainty. Further advances have been made in Pigs for Steel making purposes, Low Phosphorus at \$22.75, delivered; Bessemer at \$20.25, and Basic at \$16.75, but it is very doubtful if these purchases could be duplicated, simply because everything is taken up and there is no more to be had for delivery within any reasonable time. Prices, therefore, must necessarily be quoted subject to a much wider margin than usual, but in a general way would be about as follows for Philadelphia and nearby deliveries: No. 1 X Foundry, \$18 to \$18.50; No. 2 X Foundry, \$16.75 to \$17.50; No. 2 Plain, \$16 to \$16.50; Standard Gray Forge, \$16 to \$16.25; Ordinary Gray Forge, \$15.25 to \$15.75; Basic (Chilled), \$16.50 to \$17; Bessemer, \$19.25 to \$20.25.

Billets.—The same old story of extreme scarcity is still to the front. Domestic Steel is nominally \$30 to \$31, but it is almost impossible to find any for sale. Canadian Steel makers are also sold as far ahead as they care to go, and an advance of \$1 per ton is asked for German Steel, say \$28.50, but deliveries are hard to arrange for any kind of Steel and from any source.

Plates.—The demand has been very heavy during the past couple of weeks. The Lukens Iron & Steel Company alone have booked something like 20,000 tons during the period mentioned, shipbuilders, bridge builders, locomotive and tank builders, being heavy buyers, but as a matter of fact consumers in all lines of business are working up to their full capacity, so that consumption is enormous. Prices are firm, and with the increased cost of material they may be advanced almost any time. Prices for Philadelphia and nearby deliveries are as follows: Universals, 1.75c. to 1.80c.; Sheared, 1.75c. to 1.80c.; Flange, 1.85c. to 1.95c.; Fire Box, 1.95c. to 2.05c.; Marine, 1.95c. to 2.05c.

Structural Material.—It is hardly worth while to attempt a report on this line of business, as there is but one story to tell—viz., inadequate supplies, urgent demand and nominally unchanged prices, but practically \$2 to \$6 higher for reasonably prompt deliveries. The following are the official quotations for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—There is a fair amount of business around and mills find no difficulty in running pretty well up to their maximum capacity. Prices are well maintained, although once in a while outside mills quote a little under the market, but as they are not in a position to make a full line of sizes the association is not affected, except to a very limited extent. Prices are about as follows: Iron Bars, 1.67c. to 1.72c., delivered; Steel, 1.62c. to 1.67c.

Sheets.—There is quite a large business around, but as there are now a good many independent mills, prices are not very uniform, although best makes generally command more money than the following, which are for large lots, viz.: No. 10, 2.30c. to 2.40c.; No. 14, 2.60c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.10c.; Nos. 26, 27, 3.30c. to 3.40c.; No. 28, 3.50c.

Old Material.—Prices are higher, and as the supply appears to be very limited, holders are in a position to exercise full control of the market. Bids and offers are about as follows for deliveries in buyers' yards: Low Phosphorus Scrap, \$22 to \$24; Choice Railroad Scrap, \$21 to \$21.50; Light (Ordinary), \$13 to \$14; Light (Forge), \$15 to \$16; Machinery Cast, \$14.75 to \$15.25; Heavy Steel, \$19.25 to \$19.50; Old Steel Rails (short lengths), \$19 to \$19.25; Old Iron Rails, \$21 to \$22; Wrought Turnings, \$13.50 to \$14; Choice Heavy, \$14 to \$15; Cast Borings, \$8 to \$8.50; Old Car Wheels, \$17 to \$17.50; Iron Axles, \$24.50 to \$25.50.

St. Louis.

CHEMICAL BUILDING, February 5, 1902.—(By Telegraph.)

Pig Iron.—The business the past week in the Pig Iron market has been on a very liberal basis, and contracts for Iron as far distant as November are being placed on a good scale. The heaviest demand for any single grade has been for Car Wheel Iron, and it is said a large interest have taken about 30,000 tons. Shipments are now being received with a reasonable degree of promptitude, and it is hoped that this improvement in the car situation is one that will be lasting. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.75 to \$16.00
Southern, No. 2 Foundry.....	15.25 to 15.50
Southern, No. 3 Foundry.....	14.75 to 15.00
Southern, No. 4 Foundry.....	14.25 to 14.50
No. 1, Soft.....	15.75 to 16.00
No. 2, Soft.....	15.25 to 15.50
Gray Forge.....	14.25 to 14.50

Bars.—The market for Iron and Steel Bars continues along the same strong and active lines. Jobbers report a very strong and satisfactory condition of affairs in their branch of the trade. We quote, from mill, Iron

Bars at 1.80c., Steel Bars at 2c. Jobbers quote Iron Bars at 2c. and Steel Bars at 2.10c., full extras.

Rails and Track Supplies.—The report from the Rail department of the market is merely an emphasizing of the unusually strong conditions which have been the ruling factors for some time. The order books are well filled and the mills are assured of plenty of business for months to come. In the market for Track Supplies a very similar set of conditions are to be noted. We quote: Splice Bars, 1.75c. to 1.95c.; Bolts, with Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2½c.

Angles and Channels.—Jobbers quote a very good market for Small Angles and Channels and a quotation at 2.30c., base, for materials of this class.

Sheets.—The market for Sheets of all grades and sizes is active and strong, and a marked firmness is to be noticed in the price-list. Jobbers quote at Stove Pipe size, No. 27, 3.45c. to 3.50c.; Galvanized Sheets, 65 and 10 off, and in round lots, 70 to 70 and 5 off.

Pig Lead.—An improved tendency in the volume of business in the Pig Lead market is to be noted the last week and prices hold very firm around present level. Missouri brands at 4c. and Desilverized at 4.05c.

Spelter.—A slightly heavier volume of business is said to have been done the past week in the Spelter market and 3.90c. to 3.95c. covers price conditions.

Cincinnati.

FIFTH AND MAIN STS., February 5, 1902.—(By Telegraph.)

There has been quite a satisfactory run of business during the past week. In Foundry Pig Iron the trade has been steady and the volume, while not large, has nevertheless been as much as could have been expected. There have been a number of good sales of Basic Iron, which adds materially to the total tonnage. There is now left but odds and ends for delivery prior to July, and almost all selling is for the last half of the year. In this immediate territory there have been a few sales of round lots of Foundry and Car Wheel Irons. The situation is practically unchanged, and were it not for the car shortage on the roads north of the Ohio River the cause for complaint would be nominal. Prices are strong and in the main unchanged. Freight rate from the Hanging Rock district is \$1.10 and from Birmingham \$2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.25
Southern Coke, No. 2.....	to 14.75
Southern Coke, No. 3.....	to 14.25
Southern Coke, No. 4.....	to 13.75
Southern Coke, No. 1 Soft.....	to 15.25
Southern Coke, No. 2 Soft.....	to 14.75
Southern Coke, Gray Forge.....	to 13.75
Southern Coke, Mottled.....	to 13.75
Ohio Silvery, No. 1.....	\$16.75 to 17.25
Ohio Silvery, No. 2.....	16.25 to 16.75
Lake Superior Coke, No. 1.....	17.35 to 17.60
Lake Superior Coke, No. 2.....	16.85 to 17.35
Lake Superior Coke, No. 3.....	16.35 to 16.85
Southern Basic.....	to 16.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$18.75 to \$19.25
Standard Southern Car Wheel, No. 2.....	17.75 to 18.25
Lake Superior Car Wheel and Malleable.....	18.50 to 19.00

Plates and Bars.—The market is strong and active. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.72c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Steel Bars, in carload lots, 1.65c. to 1.70c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Angles, in carload lots, 2c.; Plates, ¼-inch and heavier, 1.90c. to 2c.; 3-16-inch, 2.10c.; Sheets, No. 16, 2.90c. to 3c.

Old Material.—The price and general conditions are unchanged. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, per net ton, \$15.25 to \$15.50; Cast Railroad and Machine Scrap, \$12.25 to \$12.75; Iron Axles, \$20.50 to \$21; Iron Rails, \$19.50 to \$20; Steel Rails, rolling mill lengths, \$15.75 to \$16; short lengths, \$13.75 to \$14; Car Wheels, \$16 to \$17. All prices except No. 1 Wrought on the basis of gross tons.

Cleveland.

CLEVELAND, OHIO, February 4, 1902.

Iron Ore.—The sales of Iron Ore during the week have been quite large. It would be difficult to come at the exact amount of business done to date, but it has quite come up to expectations. The buying so far has developed competition as to tonnage rather than as to price, and the original intention in regard to values has been adhered to very strictly. No one is known to have made any effort to undersell another, all business being done on the quality of the Ore or through trade relations long sustained. The entire supply for the year has not been sold up, but it is expected that the major portion of the Ore which the big companies hope to market this year will be sold off inside of the next week or ten days at the outside. The sales already indicate this, and the inquiries in hand are a more potent indication. The Ore of which to make disposition this year is not of equal quantity with that of last year, because the United States Steel Corporation use more of their own Ore, for one thing, and then some of the smaller companies have already anticipated the market by an aggregate of sales of 2,000,000 tons of Ore for this year's delivery. This has cut down the salable volume of Ore very materially. The quotations on the market remain as follows: Bessemer Ore, \$4.25; Non-Bessemer Old Range and Bessemer Mesaba, \$3.25, and Non-Bessemer Mesaba, \$2.75, lower lake ports. The similarity of the prices this year to those of last indicate that the shippers will choose to make arrangements for the movement of that Ore upon either the same or a little lower basis than last year. Nothing has been done in season chartering as yet, although something along this line is expected in the next week or ten days. The vessel interests are firmly refusing to accept anything less than they had last year and are demanding 20c. a ton more. This contention is likely to equalize upon a basis either identical with or similar to that of last season. There is some talk of a compromise upon 90c. between Duluth and Ohio, but the shippers are very much opposed to making any concessions that would yield them virtually the same margins on their Ores as they obtained last season. In whatever is done, however, it is conceded that the United States Steel Corporation will lead, as all of the shippers at present are holding back until they shall have chartered some vessels.

Pig Iron.—The faith which the consumers of Foundry Iron have in the future is indicated by the heavy buying which is developing in some quarters of Foundry Iron for the second half of the year. There is no weakness displayed in the market for this period, as the prevailing prices are accepted without the slightest hesitation. One furnace has announced that its entire product for the year has been disposed of, and the same company are almost off of the market in other grades as well. Material for quick shipment is very scarce. Some of the consumers have been compelled to depend upon such small lots as can be picked up here and there, and naturally are not supplying their needs. Others are going without their Iron, or will be compelled to do so during the better part of the second quarter. These are mostly the little buyers, who take Pig Iron in carload lots. Foundry prices do not change from \$16.50 and \$16, respectively, for Nos. 1 and 2, Valley furnace. It has been learned that Pickands, Mather & Co. of this city are perfecting plans for the erection of a blast furnace at Toledo, with a productive capacity of 350 to 400 tons per day. This will be stationed along the Maumee River and will have Ore dock in connection. It is the intention to produce Foundry and Malleable Iron.

Finished Material.—Persuaded to the step by the heavy buying of the last ten days, the Bar Iron producers have agreed to advance the price \$2 a ton and are now quoting 1.60c., Pittsburgh. The same is also a concession to those who have been contending for the restoration of the Youngstown base on the price of Bar Iron. This is, in part, a readjustment of the contention which has been agitating the Bar producers for several months, and it is now believed that a permanent settle-

ment has been arranged, although there are some who contend that conditions are unequal as to the sale of Bessemer Steel Bars and Iron Bars, the former having the advantage. Those who have held out for the increased price of Steel Bars also failed to accomplish their end and the same old quotations prevail—namely, 1.50c., Pittsburgh, for Bessemer Steel Bars; 1.60c., Pittsburgh, for Open Hearth Steel Bars, and 1.60c., Pittsburgh, for Iron Bars. The demand now is quite good and the tonnage taken on lately is very highly satisfactory. The buying of Structural Material has been so heavy that the mills are no longer able to meet the immediate demands and the sales out of store are now very heavy. The mills are offering to make deliveries only after three months. The inquiry for Plates has also kept up and the outlook ahead is very bright indeed. The ship companies, who are large buyers of Plates, have orders on hand now that will keep them busy all summer and are taking Steel as fast as the mills can produce it. In addition there are other orders on the books and many that are soon to be placed that make a most excellent market for the Steel. Sheared Plates are now sold well ahead of production, and three months is the best offer made for deliveries of Universal Mill Plates. Sheets are selling well, but with few changes of conditions.

Old Material.—The market has quieted down some. The dealers hoped, had there been a general advance in Bars, to be able to make a general advance in the price of Scrap. In anticipation of this they noted a stronger market last week than has existed for some time. The failure, however, to greatly change the price of Bars knocked the bottom out of the Scrap boom, and it is back to the old basis and firmly settled upon it. The quotations remain as follows: No. 1 Wrought, \$16 net; Cast Borings, \$8 gross; Wrought Turnings, \$12.25 gross; Cast Scrap, \$13 net; Stove Plate, \$10 net; Heavy Steel, \$17 gross; Old Iron Rails, \$22 gross; Steel Rails \$17 gross; Old Iron Axles, \$22 gross; Old Car Wheels, \$17 gross.

Pittsburgh.

HAMILTON BUILDING, February 5, 1902.—(By Telegraph.)

Pig Iron.—The market has been quiet in the past week, consumers being pretty well covered, but mainly for the reason that the furnaces have very little Iron to sell. Most of the output of the furnaces up to July is owned by the consumers, and were it not for this fact prices of Pig Iron would no doubt be much higher than they are now. Several fair sized lots of Standard Bessemer have been sold at \$16 to \$16.25 at furnace, while some small lots for spot shipment have brought as high as \$16.50. Gray Forge is in active demand and is firm at \$16 to \$16.25, Pittsburgh. We quote Standard Bessemer Iron at \$16 to \$16.50 at furnace, or \$16.75 to \$17.25, Pittsburgh. Gray Forge is \$16 to \$16.25; No. 2 Foundry, \$16.50 to \$16.75, and No. 1, \$17 to \$17.25, Pittsburgh. We note a sale of 6000 tons of Standard Bessemer at \$16 at furnace. There were sales during January of about 210,000 tons of Standard Bessemer Iron by the Bessemer Furnace Association and outside interests, prices ranging from \$15.75 up to \$16.50 at the furnace. We note a sale of 2000 tons of Standard Forge Iron at about \$16, Pittsburgh.

Billets.—The Steel market is in a deplorable condition as far as supply is concerned, and some of the mills rolling Axles, Bars, Sheets and other material are in distress for Steel, and the situation will not be any better until much of the new open hearth capacity that is coming on the market is available. We quote prompt Billets, in small lots, at \$28.50 to \$29, maker's mill. Basic Open Hearth Billets are said to have sold as high as \$30, maker's mill, for prompt shipment. There have been sales of Sheet Bars at \$32.50 to \$33, delivered, at buyer's mill. Some of the independent Sheet mills are agitating the matter of building a Basic Open Hearth plant and blooming mill and rolling their own Bars.

(By Mail.)

The Iron trade continues in a most satisfactory condition, but the past week has been without special feature. A limited tonnage of Pig Iron is selling, but the large consumers are pretty well covered for some months ahead. Bessemer Pig for February and March shipment is bringing about \$16.50 at furnace. Steel continues very scarce, and some of the Sheet mills are paying very high prices for Sheet Bars. Finished Iron and Steel is in good demand, with the exception of Plates, tonnage in which is not as satisfactory as it might be. There is some unevenness in prices of Merchant Pipe, owing to so much new capacity coming on the market.

Ferromanganese.—The domestic producer continues to quote 80 per cent. Ferro at \$52.50, delivered. Foreign continues to be offered at about \$50, f.o.b. cars Pittsburgh.

Muck Bar.—The market is quiet, and we quote best grades at \$28.75 to \$29, delivered. We note a sale of 500 tons at the lower price.

Spelter.—The market is a little lower, and we quote prime Western grades of Spelter at 4.10c., Pittsburgh. A sale of 50 tons is reported at this price.

Plates.—A fair amount of tonnage is being placed in Plates, but none of the mills are crowded with work, and are able to ship out within a week or two after receipt of order. We quote: Tank Plate, ¼ inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. Small lots of Plates from store are sold on the basis of 1.70c. to 1.75c. for Tank, with the usual advances for the higher grades.

Rods.—There is an active demand for Rods and the market is firm. We quote Bessemer Rods at \$35 to \$35.50, maker's mill.

Bars.—There is a heavy demand for both Iron and Steel Bars, and some of the leading mills are so crowded with work that they are not able to make deliveries within six weeks to two months. We quote Steel Bars at 1.50c. minimum, half extras, with \$2 a ton advance for Basic. At the meeting of the Bar mills last week a schedule of prices for small lots was adopted by all the mills as follows: Less than 2000 to 1000 lbs. of a size, 5c. advance, less than 1000 to 500 lbs., 15c.; 500 lbs. and less of a size, 25c. per 100 lbs. advance, half extras. The price of Iron Bars is firm at 1.60c. at mill, half extras. Steel Hoops are 1.90c., base, in carloads, with the usual advances for small lots.

Sheets.—A full account of the meeting of the Independent Sheet mills held here yesterday is given elsewhere in this issue. We note an active demand for both Black and Galvanized Sheets, and prices among the mills are very firm. However, some of the jobbers who have stocks bought when prices were lower are making lower prices than the mills. We quote: No. 27 Black Sheets, Box Annealed, at 3c. to 3.10c., and No. 28, 3.10c. to 3.20c. It is possible that for very large orders these prices might be slightly shaded. We quote Galvanized Sheets at 70, 10 and 5 off in large lots and 70 and 10 in small lots. All these prices are at maker's mill.

Structural Material.—A heavy tonnage is being placed right along, and the mills are filled up for three or four months or longer. Building is being delayed a good deal, owing to inability to get material. The leading bridge interest is said to be filled up with work to September. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Small lots of Beams and other Material are sold on the basis of 1.85c. to 2c., and higher.

Merchant Steel.—The market is active, and a good deal of tonnage is being placed for delivery in second

and third quarters. It is possible the Shafting agreement on prices may be renewed. We quote Steel Shafting at 55 off in carloads and 50 per cent. off in small lots, delivered at any point east of the Mississippi River. Tire Steel is 1.70c. to 1.75c.; Toe Calk, best quality, is 1.85c. to 2.05c.; Open Hearth Spring, best quality, 2.50c. to 2.60c.; Hammered Lay Steel, 3.75c. to 4c.; Ordinary Sleigh Shoe, 2c. to 2.25c.; Sleigh Shoes, tapered and bent, 2.75c.; Tool Steel, 6½c. and upward. On Tool Steel freight is allowed to points east of the Mississippi River.

Boiler Tubes.—We note a continued heavy demand for Boiler Tubes, and prices are very firm. Jobbers quote to the small trade as follows:

Boiler Tubes.		Up to 22 feet.
Steel.		Per cent.
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive.	65½	
2 inch to 2½ inch, inclusive.	60	
6 inch and larger.	59	
Iron.		
1 inch to 1½ inch and 2½ inch.	43½	
1¾ to 2¼ inch.	43	
2¾ to 13 inch.	53	

Iron and Steel Skelp.—There seems to be a better demand, and prices are reported as being firmer. We quote Grooved Iron Skelp at 1.75c. to 1.77½c., and Sheared at 1.80c. to 1.85c., delivered. About \$2 advance on these prices is quoted for Steel Skelp.

Merchant Pipe.—Tonnage in January is reported as being heavier than in the corresponding month last year. We note that prices continue to be shaded by some of the new Pipe mills, who are soliciting orders through jobbers and other sources. The leading interest has not made any change in discounts. Jobbers quote the small trade as follows:

Merchant Pipe.		Black.	Galvd.
		Per cent.	Per cent.
¾ to 1½ inch and 11 to 12 inch.	61	48	
¾ to 10 inch.	68½	56	
Casing, Random Lengths.		S. & S.	I. J.
2 to 3 inch.	58	53½	
3¼ to 4 inch.	63	59	
4¼ to 12½ inch.	65	61½	
Casing, Cut Lengths.		S. & S.	I. J.
2 to 3 inch.	53½	59	
3¼ to 4 inch.	59	55	
4¼ to 12½ inch.	61½	57½	

Prices quoted by the mills to the jobbers are lower than the above, depending on the buyer and the order.

Coke.—The car supply is reported to be better, but is not satisfactory yet by any means. Blast furnaces that are unable to get prompt delivery of Coke continue to offer high prices for it for prompt shipment. Output in the Conneilsville region is increasing, and last week exceeded 210,000 tons. We continue to quote strictly Conneilsville Furnace Coke at \$2.25 a ton on contracts for delivery through this year and \$2.50 to \$3 a ton for prompt shipment. Seventy-two-hour Foundry Coke is \$2.75 to \$3 a ton on contracts and up to \$3.50 a ton for prompt delivery.

Scrap.—The large dealers in Scrap have the situation well under control, and are holding prices very firm. Consumers are buying very cautiously, and there seems to be something of a deadlock on between consumer and dealer. We quote Billet and Bloom Ends, for which there is a very active demand, at \$17.50 to \$18 gross ton. Cast Scrap is \$12.50 to \$13 gross ton, and No. 1 Wrought Scrap \$16.50 to \$17 net ton. Skelp Ends are being sold by the Tube mills as high as \$25 a ton for delivery in first six months.

The Belgian Iron Market.

BRUSSELS, January 15, 1902.

While in the United States the year 1902 opens with splendid prospects for the metallurgical markets, the situation in Belgium has remained pretty precarious lately, although at this moment a very slight improvement is observed. The Christmas and New Year's holidays have naturally resulted in a complete absence of transactions, and the greater number of our large works have taken occasion under these circumstances to impose upon their workmen a number of days of idleness. This has had a good effect, since production has been reduced, and the rolling mill proprietors have been able to present a better front against the disadvantageous propo-

sitions of middle men. However this may be, it is certain that a slight improvement has taken place in all lines. Possibly the finished materials have been a little behind in this fortunate recovery, but everything leads to believe in a better feeling at an early date.

In Foundry Iron there is a well sustained demand, particularly for the machine shops which have work for locomotive cylinders and other castings for rolling stock growing out of the placing of orders on the part of the State. Mill Iron is also doing a little better, which is the result of the fixing of prices on Coke at 17 francs for the first quarter of the year. Foreign Pig Iron, notably that from the Longwy Basin, is firmly held. No. 3 Luxemburg Foundry Pig is quoted 55 francs; Luxemburg Mill Iron, 48 francs, and Charleroi Mill Iron, 52 to 53 francs; Basic Bessemer Pig is sold at about 60 francs.

The following are the imports and exports of Pig Iron and Old Material during the years 1901 and 1900:

Belgian Imports and Exports of Pig Iron and Old Material.

	IMPORTS.	
	Year 1901.	Year 1900.
	Tons.	Tons.
Pig Iron.....	165,781	305,668
Castings.....	7,708	4,005
Old Material.....	49,048	62,053
Totals.....	222,537	371,726
	EXPORTS.	
	Year 1901.	Year 1900.
	Tons.	Tons.
Pig Iron.....	16,082	8,252
Castings.....	23,721	27,061
Old Material.....	20,924	43,736
Totals.....	60,727	79,049

There is, therefore, a falling off of 149,189 tons in the importations, but also, unfortunately, a decline of 9322 tons in exports. The price on Old Materials has strengthened and the last letting on the part of the State for 6000 tons of Old Material has been done approximately at the following figures: 60 francs for Old Cast Iron, 72 francs for Old Wrought Iron, 62 francs for Old Steel, and 45 and 37 francs for Iron and Steel Turnings, respectively.

Intermediate products have advanced some, Ingots being at 87 francs, Blooms 95 francs and Billets 105 francs. Muck Bar is still offered at 87½ to 90 francs.

Our importations of intermediate products during the year 1901 were 78,435 tons, as compared with 20,735 tons in 1900. They have, therefore, almost quadrupled. Our exports, on the other hand, have declined, having been 1817 tons in 1900 and 609 tons in 1901. These figures eloquently prove the critical situation of our Steel works during the last year.

The market in Finished Material is far from being lively, but the prospects for the future are more encouraging. Below are given the exports and imports of Finished Material during the years 1901 and 1900:

Belgian Exports of Finished Products.

	Year 1901	Year 1900.
	Tons.	Tons.
Iron and Steel Wire.....	7,706	6,772
Beams.....	23,134	80,064
Rails.....	118,210	64,275
Plates and Sheets.....	70,683	74,498
Rolled Iron and Steel.....	250,606	190,194
Nails.....	16,934	13,758
Shapes.....	70,504	80,398
Galvanized Iron and Tin Plate.....	3,863	3,920
Totals.....	561,640	513,879

Belgian Imports of Finished Products.

	Year 1901	Year 1900.
	Tons.	Tons.
Iron and Steel Wire.....	37,763	24,327
Beams.....	10,629	2,311
Rails.....	1,085	1,981
Plates and Sheets.....	10,992	14,701
Rolled Iron and Steel.....	23,197	31,013
Nails.....	786	698
Shapes.....	12,995	8,529
Galvanized Iron and Tin Plate.....	4,608	5,357
Totals.....	102,055	88,917

There has been an increase in our imports of 13,138 tons, or 14 per cent., while our exports have risen 47,760 tons. For Bar Iron the demand is particularly good from England. Merchants who have finished their inventories find it necessary to round out their stock and are passing through orders at the prices offered by the manufacturers. Steel Bars and Beams are apparently not

suffering as much from the German competition, which has grown less severe lately. One of the causes for this change is the decision arrived at by the Beam syndicate in Germany not to sell for export at less than 92 marks, f.o.b. Antwerp. This syndicate have submitted propositions to the French Beam syndicate, the Comptoir des Poutrelles, 80 Rue Taitbout, Paris, and to our producers of this specialty. This is the first serious step toward improvement.

In Rails a good many orders have been received. Our large Steel works at Liège, the Cockerill, the Ougree and the Angleur have divided an order for 50,000 tons for Mexico, the first two taking 20,000 and the third 10,000 tons. This is quite a success for us and furnishes work for a certain time. The Americans, who have also obtained 50,000 tons, may regard such an order as something quite ordinary. Unfortunately, the price accepted here is not more than 105 francs per ton, and this is a figure which cannot very well yield any profit to the mills.

The Sheet mills have received orders enough during the past two weeks and expect soon to be able to raise prices a little. Our Wire mills are getting very few orders, but the works have not yet cleared their books and are still able to wait. With the rising tendency in Steel and Pig Iron, buyers should soon decide to pay higher prices, particularly since the German mills are putting up their figures. The proposal for an agreement which the Wire syndicate have submitted to the Belgian works is being studied. The Belgians would be favorable to an understanding if the Germans consented to abstain from invading our country with their products. On such a natural basis there would be a fair prospect of success.

So far as the construction shops are concerned, those have considerable work who have secured Government contracts and who make a specialty of rolling stock. Those who are engaged in building stationary engines, in bridge building and in structures of this type are less well supplied, except those plants who have had the foresight to equip themselves with the latest plant. These are standing up in the fight very well. All the new works, and more particularly the Société Anonyme Energie, at Marcinelle, have bought their machine tools in America and are thus in a position to turn out excellent work, from the point of view of finish and precision, at low prices. This shows that from every point of view the American machine tools compare very favorably with those of Europe.

In the Nail trade there has been no change. Unless the understanding which has been talked about for a long time is brought about, the Nail manufacturers will be in a very critical position. As a matter of fact, foreign competition crowds them more and more on all foreign markets, and as they sell in Belgium at prices below that of Rods there can be no question of getting even in the Belgian market.

The manufacture of Chain and Heavy Hardware is progressing favorably. The orders are even too abundant for the supply of skilled labor which is now available.

New York.

NEW YORK, February 5, 1902.

Pig Iron.—The market is hardening, and it is becoming increasingly difficult to place any orders for delivery during the first half of the current year. One of the leading producers of the Lehigh Valley had advanced prices to \$17 for No. 1 and \$16.50 for No. 2 Foundry, at furnace, to which 65c. must be added to arrive at the tidewater price. We quote for Northern Irons: No. 1, \$17.65 to \$18; No. 2 X, \$16.75 to \$17.25; No. 2 Plain, \$16.15 to \$16.50; Gray Forge, \$15.50 to \$16; Tennessee and Alabama brands, No. 1 Foundry, \$16.25 to \$16.75; No. 2 Foundry, \$15.75 to \$16; No. 1 Soft, \$16.25 to \$16.75; No. 2 Soft, \$15.75 to \$16; No. 3 Foundry, \$15.25 to \$15.50; No. 4 Foundry, \$14.75 to \$15; Gray Forge, \$14.50 to \$14.75.

Steel Rails.—The condition of the market is indicated by the fact that a leading Southern railroad has been endeavoring to place about 25,000 tons of Rails in vain,

and is now negotiating for the importation of a part of the tonnage for prompt delivery. We continue to quote \$28 at Eastern mill for Standard Sections.

Structural Material.—Two of the Eastern mills have sent notices to the trade of an advance in the price of Beams and Channels to 1.95c. per lb., believing that the present state of affairs justifies higher prices. The Western mills have not followed suit. Only moderate contracts have been awarded during the last week, among them being a number of school houses calling for 300 and 400 tons each. For one, which calls for 1000 tons, the Structural Material has not yet been placed. The contract for the power house of the Rapid Transit Company is not closed. There is some talk of importing Structural Material. Prices are quoted as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.95c.; Angles, 1.75c. to 1.85c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.78c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.40c. for C. H. No. 1, 2.90c. for Flange, and 3.40c. for Fire Box. Refined Bars are 1.65c.; Soft Steel Bars, 1.70c.

The King Bridge Company have consolidated the Boston and New York offices. Hereafter the New England business will be attended to by Geo. E. Gifford, Eastern representative, at 120 Liberty street, New York.

Monthly Summary—Quotations of Iron Stocks.

Cap'l Issued.		Sales.	High-est. uary.	Jan-est. uary.	Low-est. uary.	Jan-est. uary.
\$10,000,000	Am. Bicycle Co., com.	1,000	23 1/2	24	2 1/2	4
20,000,000	Am. Bicycle Co., pref.	1,000	12	31	10	6
29,000,000	Am. Car & F'dry, com.	32,000	31 1/4	4	28 1/4	14
29,000,000	Am. Car & F'dry, pref.	12,200	88 1/4	9	85 1/4	14
	American Loco., pref.	55,000	94	7	89	8
45,000,000	Cambria Steel.....	46,000	25 1/2	2 & 3	24 1/2	17
17,000,000	Colo. Fuel & Iron....	14,000	88 1/4	3	84	8
24,410,900	Crucible Steel, com....					
24,399,500	Crucible Steel, pref....	500	80 1/2	31	86	10
1,975,000	Diamond State Steel....	4,500	2	9	1 1/2	18
15,000,000	Inter. Pump, com.....	6,500	53 1/4	28	47	2
8,850,000	Inter. Pump, pref....	1,200	90	16	87 1/2	6
11,000,000	International Silver....	1,200				
10,750,000	Pa., new, com., Phila....					
16,500,000	Pa., new, pref., Phila....	2,000	86	22	84	7
12,500,000	Pressed Steel, com....	12,000	42 1/2	3	39	14
12,500,000	Pressed Steel, pref....	8,500	80 1/2	2	23	22
27,191,000	Rep. Iron & St., com....	2,900	17 1/2	7	15 1/2	2
20,306,900	Rep. Iron & St., pref.	12,000	70	7	68	16
7,500,000	Sloss-Shef. S. & I., com.	1,000	30	6	30	6
6,700,000	Sloss-Shef. S. & I., pref.	15,000	83	3	82	8
20,000,000	Tennessee Coal & Iron.	45,000	67 1/4	3	64 1/4	14
1,500,000	Tidewater Steel.....	500	7	17	6 1/4	19
508,212,543	U. S. Steel Co., com....	745,625	46 1/2	7	41 1/2	15
510,173,778	U. S. Steel Co., pref.	571,000	97 1/4	7	92 1/4	27
1,500,000	Warwick I. & S.....	7,000	7	7	4	28

* Ex-dividend.

The National Bridge Company of Pennsylvania.—The National Bridge Company of Pennsylvania, recently organized at Pittsburgh, have purchased a site of 40 acres of land at Colonia, on the Pittsburgh & Lake Erie Railroad, about 20 miles from Pittsburgh, on which the concern will build a bridge works and later a steel car plant. The site lies near that of the Colonial Steel Company, who are building a crucible steel plant, and has a frontage of 2000 feet along the Pittsburgh & Lake Erie Railroad. The contract for grading the ground has been let to I. W. Logan & Co., of Rochester, Pa., and this work will start at once. Direct connection will be had with the Pittsburgh & Lake Erie Railroad by switches. The main building will be of steel frame construction and will be 200 feet wide by 550 feet long. There will also be a foundry, machine and forge shops, power house and gas producer buildings. The office building will be 40 x 110 feet, three stories high, and built of brick. The plant is being designed to produce, we are advised, 6000 tons of structural steel a month. After it is completed and in operation it is the intention to build a steel car plant to turn out 20 cars a day. E. M. Scofield, formerly of the American Bridge Company, Youngstown, Ohio, is president and general manager, and W. N. Conger of New York is treasurer. The concern have opened offices in room 505, Fitzsimmons Building, Pittsburgh, and will manufacture bridges, buildings, turn tables and steel structures of all kinds. This is the fourth industrial concern located at Colonia since last July. The others are the Colonial Steel Company, Opalite Tile Company and the United States Sanitary Ware Company.

Metal Market.

NEW YORK, February 5, 1902.

Pig Tin.—A very quiet and uninteresting market prevailed throughout the week. The speculative element are turning their attention in another direction at present. On Monday last prices advanced to 24¼c. for spot, but yesterday eased off ¼c. and to-day spot closed 24¼c. sellers. Futures were quoted as follows: February, 23½c. to 23¾c.; March, 23¼c. to 23½c.; April, 23c. to 23¾c.; May, 22¾c. to 23¼c. In London the market for spot advanced to £110 10s. on Monday. Yesterday it declined to £109 5s., and at the close to-day was quoted at £110, while spot closed at £104 10s.

Copper.—The first speculative boom of the year reached its height and collapsed. Prices were steadily raised until 13½c. was reached for Lake on Monday last. At the close of that day the break was foreshadowed by a general easing off. Yesterday the sharp break came with plenty of sellers at 13c. for Lake, 12¾c. for Electrolytic and 12¼c. for Casting. At the close yesterday February and March Casting was offered in large lots at 12½c. To-day's closing prices showed a still further break; they were as follows: Lake, 12½c. to 13c.; Electrolytic, 12¼c. to 12¾c.; Casting, 12¼c. to 12½c. It is conceded that the advance has been broken. The movement was ill timed, for consumers bought a three months' supply at bottom figures. The speculators who are now so well supplied are rushing about endeavoring to make sales and secure some of their paper profits. There are, however, no buyers. The position of the article is changed from the 11c. days only inasmuch as that large consumers have a comfortable stock on hand and speculators are similarly situated but unable to realize. It is expected that the next few months will witness some interesting doings in Copper. Periodical maneuvers are looked for in the trade. Some say that the price will again fall to 11c. before many months. The exports for the month of January were very heavy, but about two-thirds of the metal shipped went to England, where it appears in the visible supplies. The European statistics published yesterday already show some effect of this feature, as they give an increase in stocks of 1680 tons. But the heavier shipments had not arrived when these computations were made. The London market reached its highest point on Monday, with £56 15s. for spot. It lost £3 10s. yesterday, and another pound this morning. At the close to-day the cables named £52 17s. 6d. for spot and £52 15s. for futures. Best Selected was £62 10s. on Monday, and at the close to-day was quoted £59.

Pig Lead.—With the exception of the higher London quotations and the extra 2½c. imposed on spot purchases, the market is unchanged. On Saturday last the American Smelting & Refining Company commenced to add the 2½c. to all quotations inside of 15 days' delivery. Their standard quotation is on a basis of 15 days and is 4.10c. The advance in London has been steady, reaching £11 12s. 6d. to-day. There is talk of another advance here.

Spelter.—Is very weak, both here and in St. Louis. Spot here is quoted nominally at 4.20c. February and March shipments from the West are freely offered at 4.15c. St. Louis reported sales at 3.90c. London closed to-day £17 10s.

Antimony.—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

Nickel.—Ton lots are quoted at 50c. The market is unchanged.

Quicksilver.—Prices are on a basis of \$48 per flask of 76½ lbs. in lots of 56 flasks or more.

Tin Plates.—The market is entirely unchanged. The American Tin Plate Company are quoting for delivery until July 1 on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4 f.o.b. Pittsburgh district. The London market was quoted 12 shilling 10½ pence.

Under the firm name of Bruce & Cook, metal merchants, 190 Water street, Spencer A. Jennings, Philander

P. Jennings, Frank C. Jennings and A. Gardiner Cooper will continue the old business of Bruce & Cook, Russell W. McKee, Elsey C. Cook and the Estate of I. R. Bruce retiring.

The New York Machinery Market.

NEW YORK, February 5, 1902.

No change in conditions has been witnessed during the last week and consequently business is going on at a merry pace. Demand is brisk and values firm. Inquiries are as numerous as ever, and this feature adds to the faith of merchants in the immediate future.

The work of consolidating the leading builders of cranes and conveying machine companies is progressing steadily. The matter has not reached a stage, however, where the promoters feel justified in announcing their plans. We understand that the underwriting is in progress. There are strong indications that the project will be carried to a successful issue. The work is being carried on by an influential member of the United States Steel Corporation, with the assistance of a prominent corporation lawyer who has recently figured conspicuously in the formation of industrial consolidations. The new company are to be known as the American Crane & Conveying Machine Company.

Machine Tools, &c.

In the machine tool branch of the trade business ran more in the direction of smaller or medium size orders. These, however, were numerous and compensated for the absence of large deals.

It has been widely reported that the American Locomotive Company intend building a plant in Canada. J. E. Sague, mechanical engineer of the company, stated to a representative of *The Iron Age* that the report was entirely untrue. He said that deliveries are now being made on the machinery equipment recently purchased for their various plants. He also said that all large contracts had been placed for the present.

The Rogers Locomotive Works of Paterson are about to award a contract for one 100-ton and two 25-ton electric traveling cranes. This order will mark the first of an extensive line of purchases for equipping their new shops at Paterson. President John Havron of the company stated to-day that the list of machine tools required had not yet been prepared. It is expected to have it ready within about two months. As soon as the new buildings are erected the antiquated machinery of the present equipment will be weeded out and the tools rearranged according to modern shop methods. Then the company will be in a position to ascertain what new tools are desired.

The Whitney Car Wheel Company of Philadelphia, who are erecting a plant at Camden, N. J., are now purchasing their equipment. The plant, we are informed, is to have a capacity of 200 car wheels per day.

Some time ago we referred to the fact that the New York Central Railroad were building a plant at Weehawken to be known as the Marine Repair Shop. We are informed that purchases for the equipment of this plant are now being made. W. B. Pollock, manager of the marine department of the road, with offices at 10 Broadway, is in charge of the work.

The Waterbury Farrel Foundry & Machine Company of Waterbury, Conn., have just placed contracts for the erection of a power house and smithing department. The new departments are expected to be in operation by April 1.

Wonham & Magor, 29 Broadway, New York, are going to erect a new shop for the manufacture of small steel cars, portable track and industrial railway equipment. They propose to install the latest machinery for the economical production of the above material. The company are at present representatives of H. K. Porter Company, locomotives; Verona Tool Works, track tools and nut locks; Western Wheeled Scraper Company, dump cars, scrapers, &c.; Cayuta Wheel & Foundry Company, car wheels, axles, boxes, car castings.

E. W. Hurley, president of the Standard Pneumatic Tool Company, who was in New York several weeks arranging for the organization of the Consolidated Pneumatic Tool Company, Limited, has returned to Chicago. It is believed that he will give the finishing touches to the Western end of the deal, and will return to New York in about ten days and launch the new enterprise.

Boilers, Engines, &c.

The Mutual Electric Lighting & Power Company intend erecting a large central power station at 142 and 144 West Forty-fourth street, New York. The new syndicate is headed by H. B. Sire, manager of the New York Theatre, Broadway and Forty-third street. The new power house will be for the purpose of supplying electrical energy to the large buildings in the neighborhood, those obtaining the power holding an interest in the company.

The New York Central Railroad are preparing plans for a good sized electric lighting and power plant to be erected at West Albany. As the matter is still on the boards details cannot be announced as yet. The matter is in charge of the mechanical engineer, Grand Central Station, New York.

R. N. Oakman, chief engineer of the Loomis-Pettibone Company of 52 Broadway, New York, has returned to Monterey, Mexico, to conclude negotiations for the erection of a \$500,000 gas plant at that place. When he returns to this country the company will immediately place subcontracts for the material required. The project looks toward the establishment of a central gas plant and distributing it as fuel to manufacturing concerns. This will make a good outlet for gas engines.

The Winchester Repeating Arms Company of New Haven, Conn., have just awarded another contract to Westinghouse, Church, Kerr & Co. for a 120 horse-power gas engine. The New Haven concern are gradually converting their plant entirely to the use of gas engines.

An order for a 1200 horse-power Westinghouse compound engine was received by Westinghouse, Church, Kerr & Co. from the Orr Cotton Mills of Anderson, S. C.

W. W. Dunnell of Providence, R. I., who formerly controlled the Dunnell Print Works, is arranging plans for the erection of another similar plant.

Orders have not yet been awarded for the turbines which are to operate in connection with the three 10,000 horse-power electric generators which the General Electric Company will install on the Canadian side of the Niagara Falls. The Canadian Niagara Power Company are awarding the contracts for this work.

Naval Supplies.

Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until March 8, for furnishing a 20-ton floating derrick for the navy yard, Portsmouth, N. H. Appropriation, \$20,000. Plans and specifications can be seen at the navy yard named or will be furnished by Mordecai T. Endicott, Chief of the Bureau.

The specifications for supplies for the Puget Sound Navy Yard, to be opened February 25, call for the following material:

- Class 2. One improved reversible shaper with iron table and countershaft.
- Class 3. One improved power mortiser.
- Class 4. One improved band saw machine.
- Class 5. One pattern makers' lathe.
- Class 6. One double end emery grinder.
- Class 7. One improved wood worker complete.
- Class 8. One 16-inch screw cutting lathe.
- Class 9. One improved screw cutting engine lathe.
- Class 10. One 20-inch screw cutting engine lathe.

Awards for supplies for the Boston Navy Yard, under bids opened January 14, have been made to the lowest bidders.

Sanson & Rowland, 422 Commerce street, Philadelphia, Pa., recently purchased the entire stock, good will and fixtures of the late Mechanics' Tool Company (McFadden Company and Philadelphia Machinery & Supply Company) of the same city. The stock was sold at bankrupt sale, the latter companies having made an assignment some months ago.

A change in management of the American Stoker Company was effected last week at the annual meeting of the stockholders. The following Board of Directors

was elected: Royal C. Peabody, Charles J. Peabody, David H. Valentine, Edgar F. Hicks, Edwin Packard, Hector Adam, M. R. Dayton and David Brower. The three last named gentlemen replace H. B. Hay, H. W. Fullerton and Jacob Healy as members of the board.

The Rand Drill Company, 128 Broadway, New York, manufacturers of air and gas compressors, blowing engines, Rock drills, quarry and mining machinery, have opened an office in room 710, Park Building, Pittsburgh, with F. C. Weber in charge.

The American Brake Shoe & Foundry Company.

A consolidation of the Ramapo Foundry Company of Mahwah, N. J., and the iron foundry branch of the Sargent Company of Chicago, has been effected. The new company have been named the American Brake Shoe & Foundry Company. They are capitalized at \$3,000,000. Following are the officers of the new company: W. W. Snow, chairman of the board; W. D. Sargent, president; O. H. Cutler, vice-president and general manager; R. J. Davidson, secretary; H. K. Gilbert, treasurer; E. J. Snow, assistant treasurer. The company were incorporated in New Jersey. Fallows, Duffey & Milner of 18 Wall street, New York, acted as transfer agents. The New York offices of the company are located at 26 Cortlandt street.

The Sheet Meeting at Pittsburgh.—Pursuant to a call issued by A. F. Baumgarten of the Maryland Sheet Steel Company, at Cumberland, Md., about 15 independent sheet manufacturers met in the Hotel Lincoln, Pittsburgh, on Monday, February 3. The purpose of the meeting, as stated in the letter sent out to the trade by Mr. Baumgarten, was for the purpose of affording opportunity for the independent sheet manufacturers to become better acquainted, to take up the matter of prices of sheets, and also the question of supply of sheet bars and prices of same. W. L. Glessner of the Laughlin Nail Company, operating a sheet mill at Martin's Ferry, Ohio, was chairman of the meeting. A full discussion of existing conditions in the sheet trade was had by those present, but no action of importance was taken. At present the demand for sheets regulates prices, which are quite profitable to the manufacturers in spite of the high prices of sheet bars. The question of a number of the leading independent sheet mills going together to build an open hearth steel plant to roll sheet bars was discussed informally, but no definite action was taken. Some of the sheet mills are pretty well covered on sheet bars for this year and do not see the necessity now of building a steel plant. A. F. Baumgartner was appointed corresponding secretary for the purpose of addressing another letter to the independent sheet manufacturers, with a view of having a fuller meeting, to be held in Pittsburgh in the latter part of this month.

The Jackson Iron & Tin Plate Company, who are building a plant at Clarksburg, W. Va., advise us that their buildings are well under construction. About 90 per cent. of their machinery is on the ground, part of it being set, and they expect to be in operation in about 30 days. The officers of this concern are: T. M. Jackson, president; W. J. Grove, secretary and treasurer, and C. C. Moore, general manager.

The Magnus Metal Company have purchased a tract of 2½ acres at Emerald avenue and Fortieth street, Chicago, on which they propose to erect a \$100,000 plant. The brass foundry will first be erected and will have dimensions of 150 x 250 feet. A portion of this structure will be two stories high for office use.

W. C. Waterbury, who has for several years been prevented by ill health from attending to active business, is now able to resume his old relations in the Iron trade and has accepted an engagement with David Evans, Monadnock Block, Chicago, as salesman for the Sloss-Sheffield Steel & Iron Company. Mr. Waterbury is widely known in the West through previous connections with several Iron firms.

The Chicago and Northwestern Machinery Market.

The reports for the machinery trade in this section have been so highly optimistic for the past year that it would not be surprising to find manufacturers and dealers experiencing some cessation in the influx of orders. They have looked for this for a considerable period, and are pleased to find that as yet no indication appears of any decline in the volume of business. The month of January not only sustained the excellent record made the preceding year, but in many branches of the machinery trade a still greater condition of activity is observable than during the 12 months thus covered. From the builders of heavy engines and manufacturers of equipment for handling large operations down to the makers of light machinery, it is rare to find any establishment not working to its full capacity. Activity in building new factories and in enlarging old ones continues to be a feature of the situation. The demand for equipment keeps the manufacturers of electrical apparatus fully employed, and the manufacturers of power transmission machinery have possibly never been busier than at this time. The manufacturers of machine tools as well as the dealers in this line have enjoyed a remarkably good business in January, which was only slightly interrupted by the inventory season. In past years a somewhat protracted dullness has been experienced at the holiday season and during the taking of inventories, but the prosperity of the country has been so great that incidents of this kind are not now having any effect on general trade.

Steam and Gas Engines.

The Allis-Chalmers Company, Chicago and Milwaukee, report the condition of trade from their standpoint more active than ever before known. All departments of their works are crowded to the utmost, and fresh orders are constantly being booked for heavy engines and mining machinery. During the past month the Tonawanda Iron & Steel Company ordered another blowing engine, which is to be a duplicate of the one installed for them some three years since. The Chrome Steel Works have ordered a 36 x 48 inch rolling mill engine, and the Colorado Fuel & Iron Company have ordered two more large rolling mill engines. Less important orders have been numerous. The company's working force is now practically up to its maximum, conditions steadily growing better with regard to labor. The new works at Milwaukee are progressing. One section of the machine shop is so far completed that machinery is being installed, and construction is being pushed on another section, while the foundry is nearly completed. The additional capacity to be supplied by this new plant is badly needed.

The Nordberg Mfg. Company, Milwaukee, Wis., state that 1902 bids fair to surpass 1901. They have booked all the orders they dared accept, and could have booked a great many more, if they could have promised shipment, even within six months from the date of order.

The new Quincy Engine Works, Quincy, Ill., report considerable activity and many inquiries. Their shop is busily engaged on important contracts, and they anticipate increased demands during the coming months.

The Charter Gas Engine Company, Sterling, Ill., say that January met all their expectations. It is now much more a question of filling orders than it is of obtaining them. They have just booked orders for three carloads of engines, one for a State on the Atlantic Ocean, one for a State on the Pacific Ocean, and one for a central State. Many more orders are in hand from all over North America. They believe that this is but an index of what the whole year will be, and have purchased adjoining property upon which they will erect new buildings in the spring.

The Marinette Iron Works Company, Marinette, Wis., are extremely busy. Their shipments of gas engines in January not only surpassed the previous month, but exceeded all previous records. They have many orders booked ahead for engines of all sizes, including numerous large ones, and from the indications of the opening month this promises to be a very prosperous year. They

have been unable to keep up with the demand, and are receiving daily orders and inquiries from all parts of the country and many foreign countries.

Machine Tools.

The Kempsmith Mfg. Company, Milwaukee, Wis., state that the orders received during the month of January lead them to expect a volume of domestic business for this year exceeding the sales of 1901. Inquiries now coming in are of a substantial nature, and represent many branches of the metal working trade. Of the orders received during the month, one-third were booked in the first half of the month, the remaining two-thirds having been written up between January 16 and 31. The value of the entire orders received will exceed the monthly average.

The Niles Tool Works Company have just shipped to the new West Allis plant of the Allis-Chalmers Company, Milwaukee, Wis., a very large planer. This planer is 12 x 30 feet, equipped with four heads, and driven by its own electric motor.

The Marshall & Husehart Machinery Company, Chicago, report January the biggest month in their history. The orders were of medium size, but represented all classes of the machinery trade, principally engine builders, makers of electrical machinery and other establishments doing heavy work, who are now increasing their equipment. The companies they represent are crowded with work on all popular tools, particularly milling machines, lathes and boring machines. Prices are well held, the market not suffering from overstocks.

The Hofer Mfg. Company, Freeport, Ill., report their business holding its own. While orders for their regular line of goods, such as drill presses, metal saws, &c., have fallen off to some extent, yet the demand for special wire working machinery, such as bed and furniture spring machinery and wire straighteners, has materially increased. They have recently taken up the line of fence machinery, and are supplying a number of factories with this class of power machines. The outlook for the future is very encouraging.

The new Doty Mfg. Company, Janesville, Wis., say that business has been about the same during January as during the previous months. Inquiries and orders seem to hold up, and there is every prospect of trade continuing good.

The John H. Dawson Machinery Company, Chicago, found the demand for machine tools comparatively light during the early part of January, but a rather better trade in the last half of the month. They have been figuring on a great deal of business which they are confident of closing in the near future. They are now carrying a heavy representative stock, enabling them to make prompt shipments on most orders. The company have just taken the Chicago agency for Schumacher & Boye and the Oesterlein Machine Company, both of Cincinnati. The former are manufacturers of a line of 18 to 42 inch lathes and the latter are manufacturers of milling machines.

McDowell, Stocker & Co., Chicago, report their trade somewhat better than in December. Their orders have been of a scattered character, representing all classes of tool users. They have sold a number of complete outfits during January for small machine shops, representing new enterprises.

The Ransom Mfg. Company, Oshkosh, Wis., booked several very good orders in December and January, which have kept them quite busy. They now have some of the largest inquiries on hand that they have ever had. On the whole, the month has been quite satisfactory. They note a call for more large sized grinders than formerly.

Charles H. Besly & Co., Chicago, are enjoying a heavy trade in mill supplies, finding many new factories being fitted up which are constantly drawing on their stocks. These operations are not confined to the immediate vicinity of Chicago, but extend over a wide section of the country. They have further enjoyed a heavy trade in the products turned out by their factory at Beloit, Wis. The demand for their Gardner grinders has been large and shipments are being made to various points, including the Pacific Coast. They are now work-

ing on a good order for South America. A particularly heavy demand is noted for Bonanza and Badger grease cups, which are especially adapted to the use of hard oil. These cups are now being largely used on agricultural implements and other machinery exposed to summer heat. One of the properties of their Helmet oil is its ability to endure very hot weather without melting, which thus makes it particularly suited for use of this character. The extension to their factory just completed does not give them sufficient room even with the addition thus made to their facilities. They are at work on a number of new tools which will shortly be placed on the market.

The Lindemann & Hoverson Company, Milwaukee, Wis., are now purchasing machinery for their new steel range and stove works, which are projected on a large scale. The plant which this company are erecting will occupy a tract of 6 acres, most of which will be covered by buildings.

Cranes and Hoists.

Pawling & Harnischfeger, Milwaukee, Wis., makers of electric cranes, state that business conditions are satisfactory, and more than usually so in the volume of orders. To secure a very large order is gratifying, but this firm have obtained, it is believed, the largest order ever placed by one company at one time for electric cranes. This has just been given by the Allis-Chalmers Company's Edward P. Allis Works, Milwaukee, Wis., for the new factory buildings at West Allis and specifies 35 cranes, ranging in capacity from 5 to 75 tons. The demand for electric cranes in these immense and modern shops will be well taken care of through the order. In addition, Pawling & Harnischfeger have recently booked orders for 43 electric cranes from other well-known firms, among whom are the following: Aultman & Taylor Machinery Company, Mansfield, Ohio, one 10-ton; Hecla Portland Cement & Coal Company, West Bay City, Mich., three 15-ton; Holthoff Machinery Company, Cudahy, Wis., two 20-ton; La Belle Iron Works, Steubenville, Ohio, one 10-ton; McMyler Mfg. Company, Cleveland, Ohio, one 10-ton; Glamorgan Pipe & Foundry Company, Lynchburg, Va., one 15-ton; Wheeling Steel & Iron Company, Wheeling, W. Va., one 7-ton; Lorain Steel Company, Johnstown, Pa., four 7-ton; Puget Sound Naval Station, Bremerton, Wash., one 10-ton; Enterprise Mfg. Company, Philadelphia, one 3-ton; Baltimore Copper Smelting & Rolling Company, Baltimore, Md., one 5-ton; Midvale Steel Company, Philadelphia, one 10-ton and two 5-ton jib; Grand Trunk Railway System, Portland, Maine, one 2-ton; C. W. Hunt Company, West New Brighton, N. Y., one 2½-ton; John Bogart, New York, N. Y., one 14-ton.

The Industrial Works, Bay City, Mich., state that their business during the month of January was exceedingly heavy, making it one of the largest months they ever experienced. Most of the orders have come from railroad companies, and may be explained on the ground of the extensive improvements which certain leading lines will make during the present year. They have placed these orders presumably in the same manner that they have done with many others, expecting not to receive deliveries until some months later. Everything looks very promising for a good business year.

The American Hoist & Derrick Company, St. Paul, Minn., say that their business for 1901 showed for the year an increase of 27 per cent. over the preceding year, and January shows an increase over the preceding January of 48 per cent. With this as a guide, and in view of the general market conditions, they consider that the only limit to the volume of business for the year 1902 is the ability to obtain materials and the capacity to turn out product. Conditions from every point of view are most excellent.

Pumps, Compressors, &c.

The Gardner Governor Company, Quincy, Ill., have experienced an excellent trade in all lines, the month being, in fact, the largest January they can recall. Their governor, pump and compressor lines are all busy, and the sales have been in excess of the output. Business

conditions therefore look very promising and they see nothing to indicate any immediate change. The sales are not confined to any one locality, but have extended all over the country, which would indicate that good business is universally enjoyed.

Union Steam Pump Company, Battle Creek, Mich., say that business is moving along with a sturdiness that seems to be permanent. The most notable contracts that they have made lately are for special pumps for use in manufacturing fish products. They have recently been compelled to refuse business because of inability to make the delivery desired.

Power Transmission.

The Northern Electrical Mfg. Company, Madison, Wis., say that orders are coming in freely and increasing in volume. Usually there is a slackening up of orders by every one during the closing month of the year, but the December business was highly satisfactory, comparing very favorably with other months during the year, while January largely exceeded the volume of business for any previous month. Individual orders are increasing in size, indicating that the larger manufacturing companies are recognizing the merits of electric drive.

Stephens, Adamson & Co., Aurora, Ill., have been very busy during the past two months, running their factory until 9 o'clock at night. New work has been coming in faster than they had anticipated for the winter months; in fact so fast that it does not give them time to make up stock orders for use during the summer. They are advising all customers who plan extensions or improvements that will require anything in the line of power transmitting, elevating or conveying machinery to place their orders as early as possible, and are quite sure that those who delay placing orders will suffer for delivery. Better prices are being obtained than two or three months ago.

Molding Machinery.

Henry E. Pridmore, Chicago, reports a very good demand for Pridmore's molding machines. Large contracts have been received during the month of January, particularly from agricultural implement manufacturers, steam pump makers and railway supply establishments. Several fine orders have been secured from cotton machinery manufacturers in Great Britain. Mr. Pridmore has recently sent some large molding machines to Great Britain to be used in this branch of business, and has under construction many others to be used in the same line. This department of his business has shown considerable improvement lately. He has further shipped a number of machines to the Continent. Business in copying presses has also been exceedingly good, a fine demand coming from the Eastern States with several large orders from the Pacific slope. The new copying press which Mr. Pridmore recently brought out is developing very rapidly into an important part of his trade. In all departments January has proved to be the best month he has ever had. He is just finishing a large extension to his works, which completes the front. The addition is two stories high and consists of 60 x 100 feet, to be used for an enlargement of the machine shop, and 23 x 60 feet, which will be used for office purposes. This extension of the works is of ornamental brick and adds to the architectural effect of the factory.

Miscellaneous.

The S. Freeman & Sons Mfg. Company, Racine, Wis., say that the inquiry in their line, particularly in boilers, was never better than it is now. They are receiving about as many orders as they want until the machinery ordered for increasing their output has been received and placed, which will probably take about 30 days. With present facilities they would be able to turn out the work on hand in less than four months if they got no more orders. The inquiries for internally fired corrugated furnace boilers are surprising. In one day they recently had an inquiry from a neighboring city for 5000 horse-power, divided among three different plants. There are several very large orders for this type of boiler being considered now, which will probably be placed within the next 30 days. They anticipate a

heavy season's business, the prospects being better now than a year ago.

The D. Clint Prescott Company, Menominee, Mich., state that the new year has opened up entirely to their satisfaction. Business is on the increase all the time, and they have a full complement of orders for a long way ahead.

The Chicago Wheel & Mfg. Company, Chicago, manufacturers of emery wheels, are so crowded with orders that they are working a large part of their workmen 15 hours daily and are considering the employment of a full night force, which will give them two shifts of ten hours each. January was the best month the company ever had in orders for early delivery, and they have also booked many orders for delivery in the future. The demand for heavy grinding machinery shows that manufacturers are still enlarging their facilities. The company are doing a good export trade in addition to their domestic business.

The Novelty Iron Works, Dubuque, Iowa, report a very satisfactory business for January, the volume of sales far exceeding those of December. Orders for the Improved Boss power hammer have been coming in so rapidly during the last two months that this department of the works is taxed to its utmost capacity, although the season started with a large stock on hand. Recent shipments of these hammers have been made to Kansas, Illinois, Nebraska, Michigan, Oklahoma, Ohio and Washington City., while one will go to Auckland, New Zealand. The season for shingle sawing machines is now at hand and orders for the Triumph hand feed machines have been coming along in gratifying numbers from the South and the Pacific Coast States.

The Stover Mfg. Company, Freeport, Ill., say that the month of January proved a record breaker, being about 100 per cent. better than the same month a year ago. The outlook for the sale of wind mills for 1902 is very flattering. They are likewise enjoying a very excellent hardware business, but as this line is not sold under contracts it does not afford the same opportunity for arriving at future business on these lines as in implementations.

The Standard Pneumatic Tool Company, Aurora, Ill., state that in January they sold about 50 per cent. more Little Giant pneumatic tools than during the corresponding month last year. There is a noticeable increase in business in the East and Central West. Their European business also showed a decided growth, and there is every indication that the present year will far exceed any former year.

The Adkins, Young & Allen Company, Limited, Benton Harbor, Mich., steam and power pumping machinery, have opened a branch at 14 North Canal street, Chicago, Ill., where they will also carry a general stock of steam, brass and iron goods and packings of all kinds for contractors, engineers, mills and railways.

Pittsburgh Foundrymen's Association.

The regular monthly meeting of the Pittsburgh Foundrymen's Association was held in Pittsburgh on Monday evening, February 3. There was a very full attendance, about 30 concerns being represented in person. Those present were: John McLaren, Phillips & McLaren; F. H. Zimmers and W. W. Slick, Union Foundry & Machine Company; A. W. Slocum, Keystone Car Wheel Company; T. E. Malone, J. S. McCormick Company; J. S. Early, S. C. Scott, Thomas Carlin's Sons Company; R. M. Brown, Damascus Bronze Company; C. W. Sherman, Pennsylvania Car Wheel Company; William Yagle, William Yagle & Company, Limited; S. B. Sleeth, Westinghouse Air Brake Company; S. H. Stupakoff; Phillip M. Mathes, Britain & Mathes Company; Paul Kreuzpointner, testing department, Pennsylvania Railroad Company; A. O. Backert, *Iron Trade Review*; Mr. Whitehead, Dawes & Myler Mfg. Company; Samuel W. Hay, Whitting Foundry & Equipment Company; W. L. Hirsch, American Steel & Wire Company; Mr. Moen, Pittsburgh Stove & Range Company; Mr. Krum, Naylor & Company; Mr. Frohman, S. Obermayer Company, and Robert A. Walker of *The Iron Age*. There were also

present a number of professors from industrial schools in Pittsburgh and Allegheny, who attended the meeting for the purpose of listening to the paper of the evening entitled "What Can Our Schools do for the Foundry Industry," which was read by Paul Kreuzpointner. The paper was an interesting one, and after being read a discussion took place, participated in by Messrs. Kreuzpointner, Slocum, Professors Reinecke and Connely and others. The consensus of opinion was that manual training schools as adjuncts of public schools were doing much for the foundry industry, and were turning out students who were making better molders with less training than has heretofore been necessary to learn the molders' trade. The meeting adjourned and a luncheon was served.

Iron and Industrial Stocks.

There has been only a moderate movement in steel stocks during the past week, and the range of fluctuations has been narrow. The statement of the United States Steel Corporation has made a very good impression in financial circles, and the report of the Republic Iron & Steel Company shows that concern to be in a sound condition. It is understood that the furnace plants are in very good condition, that the steel plant is doing well, and that at least seven of the rolling mills of the company are in a position to produce very cheaply. The other mills are of minor importance, and in dull times would be closed down entirely.

The treasurer's report of the Sharon Steel Company shows a net profit for the six months ending December 31 of \$259,275.98. This is at the rate of \$508,000 for the year, or 10 per cent. on the capital stock.

It is stated that of the \$160,000,000 Carnegie Company bonds less than \$1,000,000 are now outstanding, the balance having been converted into United States Steel Corporation 5s.

The annual meeting of the Pittsburgh Coal Company will be held at their office in the building of the Corporation Trust Company, Jersey City, Monday, February 10, 1902, for the election of directors to serve during the ensuing year, and for the transaction of any other business that may come before the meeting.

The directors of the Pressed Steel Car Company of Pittsburgh will change the date of the annual meeting, so that it will come on the second Wednesday of February hereafter, instead of the fourth Wednesday in January, in order to facilitate the annual reports.

The American Car & Foundry Company have sent the following statement to stockholders, showing the net earnings of the company and disposition of the same for the period ending November 30, 1901:

Earnings.

Balance year ended April 30, 1901.....	\$5,074,949
Net earnings for four months ending August 31, 1901.	1,086,864
Net earnings for three mos. ending November 30, 1901	938,611
Total.....	\$7,100,426

Disposition.

Dividends on \$30,000,000 preferred.....	\$1,575,000
Dividends on \$30,000,000 common.....	2,025,000
Balance November 30, 1901.....	\$5,075,426

While the net earnings in the above statement cover operations for the seven months ending November 30, 1901, the dividends paid cover the nine months ending November 30, 1901. The surplus for the seven months after all dividends amounts to \$450,050.

The stockholders of the Susquehanna Iron & Steel Company in special meeting have voted affirmatively on the proposition to bond the company in \$300,000 6 per cent., to raise the funds for the new pipe mill at Columbia. The bonds will be offered to the stockholders at par.

Dividends.—The Jefferson and Clearfield Coal & Iron Company have declared a dividend of 3½ per cent. on the preferred stock, payable February 15.

The American Radiator Company have declared the regular quarterly dividend of 1¼ per cent. on their preferred stock, payable February 15. Books close February 9 and reopen February 17.

The Republic Iron & Steel Company.

Alexis W. Thompson, president of the Republic Iron & Steel Company, makes the following report to the stockholders covering the business of the company for the six months ending December 31, 1901:

Condition of Plants.

From the date of the organization of the company, on May 11, 1899, to December 31, 1901, the company have charged to operating, and written off against profit and loss, for amounts expended in reconstruction, improvements, renewals and repairs, the sum of \$1,946,062.85, as follows:

From May 1, 1899, to June 30, 1900.....	\$893,013.89
From July 1, 1900, to June 30, 1901.....	566,622.54
From July 1, 1901, to December 31, 1901.....	486,426.42

Total.....\$1,946,062.85

This money has been almost wholly expended on plants that are best located in reference to markets for raw material, and where steady sales are best insured by local conditions. The expenditure of these amounts has improved the physical condition of the plants now in operation, has very materially increased the future earning capacity and placed the company in a very strong position to produce a largely increased output at much saving in cost.

In addition to this amount of almost \$2,000,000 expended for reconstruction, renewals and repairs, the balance sheet shows that since May 1, 1899, the company invested \$3,618,610.19 in entirely new construction.

Ore Supply.

When this company were organized, on May 11, 1899, their ore supply for Bessemer mixture, by the acquisition of ore mines, consisted of 2,500,000 tons. Since that date the company have acquired, by contracts extending over a period of years, by fee, and favorable leases, 11,500,000 tons additional, making a total supply of more than 14,000,000 tons, or sufficient for the requirements of our Northern blast furnaces for a period of 28 years.

Coke Supply.

We have a sufficient acreage of Connellsville coking coal to supply our Northern blast furnaces for a period of 20 years.

This supply of ore and coke places the company in a strong position to produce Bessemer and forge pig iron at the lowest possible cost.

Birmingham District.

In Alabama the company own 70,000,000 tons of ore and 50,000,000 tons of coal, mostly in fee, together with ample quantities of limestone, all within a switching distance of three blast furnaces at Thomas, Ala., which have a daily capacity of 650 tons of basic, foundry and forge pig iron. This ore, coke and limestone will cover the requirements of double the present capacity for more than 50 years. The company produce all of their coke, ore and limestone requirements in this district, and, with three modern blast furnaces, one entirely new, the others completely remodeled since they were acquired by the company, pig iron in this district will be continuously produced at the lowest possible cost.

The pig iron capacity of the Northern furnaces is 1000 tons per day and of the Southern furnaces 650 tons per day, or 600,000 tons per annum.

The company have recently acquired a tract of 1900 acres Pittsburgh coal, which insures an ample supply of steam coal for the Valley district for 40 years.

The foregoing statement of facts will suffice to convince that we own sufficient raw material to cover a steady production of pig iron for conversion at our Bessemer steel plant and rolling mills for many years to come, and into finished material at most favorable costs.

The following is a safe estimate of the value of the raw material in the ground now owned by this company:

14,000,000 tons Lake Superior ore, at 50 cents per ton	\$7,000,000
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6,000,000 tons Connellsville coking coal, at 25 cents per ton.....	1,500,000
12,500,000 tons Pittsburgh steam coal, at 10 cents per ton.....	1,250,000
50,000,000 tons Alabama coking coal.....	
50,000,000 tons Alabama red ore.....	
20,000,000 tons Alabama brown ore.....	
] at 10 cents per ton. 12,000,000	
Total.....	\$21,750,000

The operations of our plants were materially interfered with, during the last three months of the year, by reason of the inability of railroads to handle material. We are pleased to state that this condition is very considerably improved.

The following is the balance sheet:

Balance Sheet, December 31, 1901.

ASSETS.	
Real estate, plants, buildings, machinery and other permanent investments.....	\$41,091,018.54
New construction—	
May 1, 1899, to June 30, 1900.....	\$1,218,203.44
July 1, 1900, to June 30, 1901.....	1,164,175.26
July 1, 1901, to December 31, 1901	1,236,231.49
Stocks in sundry companies at cost.....	147,200.00
New gas pipe lines and gas leases, reconstruction, and prepaid royalties on ore, coal, &c., in excess of the amounts charged to operating.....	216,154.70
Inventories of raw and finished materials at cost.....	3,327,605.71
Accounts and bills receivable.....	3,015,041.92
Cash on hand.....	948,813.58
Total.....	\$52,364,444.64
LIABILITIES.	
Capital stock issued—	
Preferred	\$20,852,000
Less in treasury... ..	405,100
Common	\$27,352,000
Less in treasury... ..	161,000
Accounts and bills payable.....	2,829,801.31
Preference dividend No. 10 (paid January 2, 1902).....	356,245.75
Deferred installments on purchase of coal lands, payable in four annual amounts of \$37,000 each.....	148,000.00
Reserve for taxes and insurance.....	81,991.15
Reserve for possible losses in collection of outstanding accounts and bills receivable and to cover unknown contingencies.....	69,333.79
Profit and loss account—	
Net profit during the last six months	\$933,123.46
Deduct two quarterly dividends of 1½ per cent. each on preferred stock.....	711,616.50
Surplus created during the last six months in excess of dividends on preferred stock....	\$221,506.96
Add surplus on the books on June 30, 1901.....	1,109,665.68
Total.....	\$52,364,444.64

The profit and loss account is as follows:

Profit and Loss Account.

For the Six Months Ending December 31, 1901.

Profits from the business of the company after deducting all expenses, excepting repairs and renewals	\$1,419,549.88
Less amount charged during the six months to operating, expended for improvements, renewals and repairs (as against \$566,622.54 during the previous 12 months).....	486,426.42
Net profits during the six months.....	\$933,123.46
Deduct, two quarterly dividends, Nos. 9 and 10, of 1½ per cent. each on the preferred stock outstanding, paid on October 1, 1901, and January 2, 1902.....	711,616.50
Surplus for the six months in excess of dividends on preferred stock.....	\$221,506.96
Surplus on the books on June 30, 1901.....	1,109,665.68
Surplus on the books on December 31, 1901.....	\$1,331,172.64

Another Blast Furnace at Bellfont.—The Bellfont Iron Works Company, Ironton, Ohio, have decided to build another blast furnace, which will be erected alongside their present stack. Plans are being prepared, and contracts will be let as soon as possible.

Report has it that the Central Iron & Steel Company, at Harrisburg, will soon build an open hearth steel plant, since the supply of steel slabs from the Pennsylvania Steel Company is becoming inadequate.

HARDWARE.

AN opportunity will be given during the present month to all who are interested in the matter of retail Hardware organization to study the spirit, progress and tendencies of this important movement. While it is only within a few years that there has been any thing like a general effort on the part of retail merchants to associate themselves together for the advancement of their interests, the movement has attained a recognized position in the trade and the associations are beginning to exert an important influence. While many manufacturers and jobbers were at first inclined to regard the movement as impracticable, if not objectionable, it has in very large measure come to command the respect and approval of the trade at large. In the various State associations many strong and progressive merchants are brought together to deliberate on matters affecting their mutual interests. The contact of merchants who come together for this object is in itself very desirable and cannot fail to have good results. The way in which the many trade questions are considered by them will give especial interest to the many meetings of their associations, so many of which occur this month, the first of which are reported at length in this issue.

There are so many advantages connected with organization among the retail trade, and so much to be accomplished in the advancement of its interests, that we bespeak for the various State associations the loyal support of the merchants. In most of the States the membership is as yet comparatively limited, when, in fact, it should embrace all the larger and more progressive retail merchants. It is perhaps too much to expect that merchants doing a very limited business in remote places and out of touch with the trade at large should become actively identified with the movement. The movement is one, however, which makes especial appeal for the sympathy and co-operation of merchants of breadth of view, up to date methods and progressive spirit. The manner in which this representative class regard trade questions and tendencies will be watched with much interest, not only by other retail merchants throughout the country, but by manufacturers and jobbers who desire to be in touch with their customers, whose attitude on these questions has so important a bearing on the welfare and policy of the trade as a whole.

It is one of the accompaniments of prosperity that the demand is unusually large for articles of high grade and necessarily of high price, and this has been particularly true since 1898. Added to this is the growing taste and intelligence of the people, which call for better things. In the days of depression—which sooner or later must ensue—it will be interesting to note as to what extent the demand will be for cheaper and inferior goods, and also as to what extent public taste has moved up to a higher plane of appreciation of quality and excellence.

It is easy to overestimate the advantages on the side of the manufacturer who locates in a small town. He unquestionably can secure all the land required at a very low cost, and perhaps will be able to get it for nothing, even if he does not receive a bonus of some kind. He also pays low taxes, and in many cases is

able to secure help at more reasonable wages than he would be obliged to pay in a large city, where labor is closely controlled by trades unions. These advantages, however, are realized more by manufacturing establishments projected on a large scale than by the manufacturer of small wares, employing, say, 25 to 50 operatives, and engaged in what is ordinarily termed light manufacturing. In a matter of this kind no general rule can be laid down too positively, but the latter class of manufacturers probably enjoy, on the whole, greater advantages in a large city than in rural districts. When located in a small town the manufacturer is usually obliged to equip his establishment with its own power, is further compelled to furnish his own heat. A manufacturer requiring, for instance, 10,000 square feet of space is able to secure desirable quarters in a building erected for manufacturing purposes in good sized cities for a reasonable rent covering both power and heat, thereby avoiding the investment of considerable capital in a power plant. Even if comparatively cheap, independent power can be had by means, for example, of a gasoline engine. It consumes considerable fuel, requires some attention involving wages and entails additional expense during the winter months for heating. It has been found by small manufacturers having experience both in rural districts and in large cities that they can effect an important saving on these items, to say nothing of the advantage enjoyed by the avoidance of the investment of capital in a power plant. This saving will enable them to either put in more expensive machinery, or give them a larger capital with which to carry on their business. The location in a large city further enables small manufacturers to secure better freight rates and to accomplish a saving in marketing their goods, as they will find opportunities almost at their doors to dispose of a good part of their product and have excellent shipping facilities by which they can reach the trade throughout the country. For this reason there is a perceptible and steady growth in the development of small manufacturing establishments in the cities. More and more buildings are constantly being erected by capitalists for the purpose of affording facilities to such establishments, desiring space with power and heat. The development of manufacturing enterprise, which is thus illustrated, is not, however, by any means confined to the large centers, but in towns and villages in many parts of the country plants and factories on a larger or a smaller scale are springing up and adding to the volume and variety of the products of the trade.

Condition of Trade.

February has opened with very favorable conditions. The volume of business is excellent and appears to be satisfactory to all classes of trade. There is little difficulty in selling goods to either jobbers or retailers, and manufacturers generally are naturally refraining from making concessions in price. This fact, together with the high price of the raw material and the gradually increasing cost of manufacturing, gives the market a firm and confident tone. The break in the price of Copper and its subsequent recovery have had the effect of unsettling prices in this line, and at the present time more uncertainty exists in this part of the market than any other. A marked feature of the present situation is the fact that many leading manufacturers enter on the season's business with practically empty warehouses, not having the usual stocks of goods ready to draw from. This makes it not unlikely that the demand will be such as to cause something of a scarcity in several, perhaps

in many, lines before the season is over. This will depend in good measure on the promptness with which manufacturers can obtain raw material, a matter in which they have of late had some trouble. The lack of transportation facilities, owing to the shortage of cars, has had something to do with this. The improved condition of the market in several lines is a noteworthy feature. The trade will await with interest developments in regard to Tinware, Sheet Metal Goods, and also the outcome of the conferences which have been taking place between manufacturers of Axes. The recent advances in Bolts, Nuts and Wire Nails have had a stimulating effect on the market as a whole. In only a few important lines, owing to special influences, is there indication of any weakness in price. Export business continues to cover a large variety of lines and, in the aggregate, a large volume of Hardware and Metal products.

Chicago.

(By Telegraph.)

The opening month of the year has ended and the Hardware trade can form some opinion of the possibilities of at least the first few months of 1902. The volume of business for January ran far ahead of that of the corresponding month of last year. It is believed that the increase in value was possibly 30 to 40 per cent. The constant tendency of the trade now being toward the betterment of prices, such confidence is imparted to buyers that they place orders freely for their spring requirements. Wire Nails have been made firmer by the recent action of the manufacturers and no cutting is now being done by jobbers. All kinds of goods are going out with a rush, and from present appearance another period of difficulty in securing staple goods will be experienced this spring. Wire products particularly seem to be marked with this undesirable characteristic. New stocks are swelling the present volume of business to some extent. For some time the purchase of new stocks has been rather limited. The disposition to make new ventures in this line is an evidence of the continuing prosperity of the country. Heavy Hardware is still unusually active and jobbers report themselves almost unable to keep standard goods in sufficient stock to satisfactorily supply trade.

St. Louis.

(By Telegraph.)

The buying in the market for Hardware continues on the same liberal plane and the reports from the traveling men are of a very favorable and encouraging character. Poultry Netting is in very good demand and prices for this specialty are very firm. Axes, Cross Cut Saws and Wedges are being taken for the use of the busy lumber interests. Such lines as Ice Cream Freezers, Lawn Mowers, Screens and Screen Doors are in large demand. The present cold weather prevailing naturally interferes to some extent in building operations and may be reflected in a slackening in the demand for Builders' Hardware. Business is well distributed in all territory worked from this center and collections are, generally speaking, good, but in one or two sections a little slowness is to be noticed. The heavy department of the market is reported to be in a very satisfactory and strong condition, with volume of demand continuing well up to the standard.

Baltimore.

CARLIN & FULTON.—The first month of the new year has passed with the volume of business generally satisfactory, but in some sections disappointing where the dependence has been entirely upon cotton. In such localities the trade is inclined to buy with great caution, fearing to incur liabilities when the consumer will have little with which to pay before next fall. This condition does not apply to sections where the crops are diversified, nor to the mining and manufacturing centers.

The market is very peculiar. Many goods are extremely hard to obtain. The factories complain of lack

of coke, the slow deliveries of steel and the shortage of cars, and yet, with an enormous demand for their productions, evidently in anticipation of advances to come, the conservatism of the largest corporations is doing its best to hold in check the disposition of many concerns to take advantage of the situation and force prices to a much higher level.

How long this can be continued no one knows, and we may yet see almost a repetition of the experience of 1899. The purchasing power of the country is undoubtedly greater at the present time than it was at the time of the last boom, and, according to the public statements of the largest producers in the world, their entire capacities are contracted for almost to the end of the present year. It would be very unwise were prices to be forced unnecessarily to the figures of 1899 and then have a reaction. But between present quotations and those abnormal prices there is a fair medium to which costs may yet go without harm to either buyer or seller.

Boston.

BIGELOW & DOWSE COMPANY.—The strength and activity in the steel market and the prospects of a shortage in Wire Products induce buyers to urge immediate shipments of orders that would usually be called for March delivery. The situation is unusual this year in that the factories have no accumulation of stock and are shipping on orders to the full capacity of their production. One manufacturer of Screen Goods informs us that his product is sold to July 1. Some parties who have booked orders for Wire Screen Cloth at low prices are informing customers that they are unable to make shipment, as they cannot get the goods on account of the shortage of Wire. There will be a scramble for goods later on and it does not seem to be good policy to delay shipments. The recent advances in Wire and Wire Nails are being well maintained and the trade is looking for higher prices shortly.

As a rule the early wants of New England buyers are well covered. The early orders for Bicycles are mostly for samples and for shipment in February, as it is a custom for dealers to have openings early to show up the lines they will sell. Usually most of the orders for higher grade machines are taken from these first samples. Judging by the sample orders, if the weather is favorable the sale will be larger than last year. There are very few new features in the 1902 machines. The Sewing Machine sales are increasing each year. The quality of the machines is being improved and the prices are such that people with very limited means may purchase.

Everything looks favorable for a prosperous spring trade. There is confidence in the stability of prices and a very good outlook.

Louisville.

W. B. BELKNAP & Co.—The new year seems bound to confirm the optimistic view taken of it in most quarters. The demand for iron and steel and their more finished products has grown steadily stronger since January 1, and shows no signs of diminution.

Mines of every description are being developed all over the country, and they call for a great deal of equipment in the early stages and all the time thereafter. The railroads have publicly announced their liberal policy as buyers, and as labor is extremely well employed there is a good consuming demand, which is at the basis of all prosperity.

There have been two distinct advances in Bar Iron already, with possibility of more to follow. Wire and Nails have been marked up a notch. Stocks which were piling up fast in December have been drawn on heavily, and some are badly broken. This with the continuation of the car famine has made deliveries from the mills in many cases unsatisfactory. In fact, most of the mills can only make indefinite promises of delivery at some remote date, and there is a recognized premium for immediate service.

The unusually fine weather which prevailed up to a few days ago was responsible for a demand for everything that went for outdoor use. But now the earth

hereabout is sheeted thick with ice, which will necessarily prevent continuation of operations on the same scale. Further south, however, they will not be seriously interfered with, unless it should be by water.

The financial markets are in good, healthy, normal condition. Banks are fairly well loaned up at remunerative rates, but give out no prospect of tight money. Indeed, it looks as though money might be plenty enough before the spring was over to permit still further expansion in the shape of new consolidation, paradoxical as the words in the same connection may seem.

Philadelphia.

SUPPLIEE HARDWARE COMPANY.—Since our last favor of January 15 salesmen generally have been equipped for the road by the various jobbing houses in the country allotted to each with varied results, according to the location they each visit. Trade in some sections each year opens at a later date than it does in certain other sections. As a whole, however, the results may be looked upon as satisfactory. The volume of trade has naturally increased over the preceding two weeks, and any discouraging features (if there were any) appear to have disappeared, consequently fair orders are being received. While there is no visible sign of a speculative feeling there is a tendency on the part of the retail merchants to keep their stock in good condition for the opening spring business. The tone of the market is firm, and although recent advances do not appear to trouble the average buyers, neither do they feel very much alarmed, fearing further advances.

Wire Nails, Barbed Wire and Plain Wire.—We stated in our last letter to *The Iron Age* that our prediction was that the unwise course being pursued on these three articles would result in a climax or an end in the very near future, and within three days after that prediction Wire Nails advanced 5 cents a keg and Galvanized Barbed Wire 15 cents a hundred pounds, and quite recently a further advance of 5 cents has taken place on both Wire Nails and Plain Wire. The unwise policy, therefore, of selling short, which was pursued to some extent prior to the advance, appears to have subsided, and it is a relief to hear nothing of prices which indicate selling short. We think, however, that quotations frequently seen in trade journals are rather misleading in quoting the lowest minimum price, as on Wire Nails by the carload, or Barbed Wire by the carload, or the two combined. We hardly think it is fair to either the retail merchant or the jobber to make these indefinite quotations of prices to the large jobbing trade, who, will make a purchase of a certain number of tons and draw from that purchase to make their shipments, to which, however, factory add 5 cents to the cost for making these smaller shipments, and there is still 5 cents further advance in making shipments to the retail merchants, thus enabling the jobber to sell at factory prices for the same quantity of goods. The retail merchant is in no wise helped by the facts of the case being kept from him, but it does make it, however, unpleasant for both manufacturers and jobbers if they are not properly informed, when informed at all.

Carriage Bolts, Machine Bolts, &c.—The advance which has taken place on these goods has been variously received by the jobbing trade. Some were under the belief that an advance would take place, others that it would not likely take place because it would be unwise for the manufacturers to do so. The trade, however, have been informed within the last few days that an advance has taken place all along the line, and we think that stocks are not large in the hands of jobbers.

Poultry Netting and Wire Cloth.—These two articles, since our last favor, have settled down to a solid basis, and jobbers appear to have ceased tumbling over each other in order to secure orders. It is the opinion of a large number of jobbers that it is a "good hold" to have made their purchase of these goods, and much higher prices will be obtained before the season ends. We believe it is an equally good purchase for the retail merchants to place their orders with some one who will guarantee delivery at as early a date as possible.

Axes.—There certainly should be, and probably is, a sigh of relief from all jobbers who have been able to

complete their orders—that is, to make entire shipments of the orders they had in hand from their customers and unfilled up to January 1. There probably never was a year—there never has been one in our experience—when we have had the same difficulty in completing orders for Axes that we had during the last six months of last year. Manufacturers started out in February, 1901, with unnecessarily, so it seemed to us, and ridiculously low prices on what they called their second grade Axe. But the unfortunate position they placed the jobber in, placed him (the jobber) in a much more unfortunate and unsatisfactory position with his customers: That is, for the cheap Axes they sold they were only willing to give the jobbers a certain percentage on their purchases of high grade Axes. How was the jobber to regulate his sales according to any impractical conceived idea of a manufacturer? It cannot be done, and the consequence was that the jobbers throughout the country were willing to sell these second grade Axes at a very small percentage over cost, which, however, was the manufacturers' price for any quantity, but if they did not meet their requirements of the percentage they were then compelled to settle for these cheap Axes at the price they sold them at, the price they sold them at being the price established by the manufacturers for an equal quantity of goods. In these enlightened and intelligent days the jobber is expected, indeed compelled, to sell these goods or any other, to their best trade at manufacturers' price to the retail trade for a similar quantity of goods. There comes the hardship. The manufacturer can, with impunity, at any time he desires turn a small order down and say "We have not the goods," but the jobber who has taken orders cannot do this without offending his customers. We hope and trust that whatever is done on Axes for next year will be done on a more intelligent basis.

Cleveland.

THE W. BINGHAM COMPANY.—The general Hardware business in this district is exceedingly good at the present time. Large orders have been booked for spring goods, such as Wire Cloth, Poultry Netting, Screen Doors and Windows, and an unusually large volume in steel goods. Prices on all these goods have been exceptionally low, and merchants seem to have taken advantage of them and bought very freely, and as they will be able to sell these goods at reasonable figures to their customers, there is no reason why business on these lines of goods should not continue through all the spring months. Orders for a large amount of Wire Nails, Plain and Barbed Wire are being placed for shipment in February, and the manufacturers inform us that they are drawing on the stock piles they had laid aside for shipment in March and April, so we think it advisable for merchants to take their orders into stock early so as to be surely prepared to meet the requirements of their trade in the early spring months.

The outlook for general Hardware business in this section is exceedingly bright. A large amount of building is going on both in public and private buildings, and the specifications for the same call for the better class of materials.

Collections are good. Merchants seem to have plenty of money with which to pay their bills promptly by discounting them.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—We have been treated to a cold snap since our last, such as we have not seen for years. For many lines it has been a god-send, as the open winter had threatened the carrying over of stocks that are now ready sale. The plumbers are awaiting the thaw to reap their harvest.

Trade in the regular lines, of course, is at a standstill, although to date January has been one of the most satisfactory Januarys on record.

The export of wheat and flour has established a new record for the month and will crowd any one month in the past. The fact that over 2,000,000 bushels of wheat go foreign from this port in January makes us feel that spring and summer trade will be of the best.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The extremely disagreeable weather for the past ten days has cut down the volume of business to some extent, and orders are not quite as numerous as they were the first part of the month. Notwithstanding this the total sales for the month of January show an increase over January, 1901, and prospects for trade in February are very flattering. Prices are being well maintained, and the tendency is upward. The recent advance in Nails, Wire and other staples is being observed by the jobbers of this section. Collections are fairly good.

NOTES ON PRICES.

Wire Nails.—Under date of January 30 the announcement was made that the price of Wire Nails had been advanced to a minimum price of \$2.05 in carload lots, f.o.b. Pittsburgh, the advance taking effect at the close of business that day. The advance was not entirely unexpected by the trade, as it had been rumored that higher prices might rule after the first of the month. The market is evidently characterized by a strong tone and is represented by the quotation of \$2.05 to \$2.10, f.o.b. Pittsburgh, plus actual freight to destination.

New York.—Owing to the stocks of Wire Nails in the hands of jobbers, bought before the advance of January 30, the local market is likely to show some unevenness until they are disposed of. This is the case at the present time, as some jobbers are adhering to their former figures, for small lots from store, of \$2.25 to \$2.30, while others are quoting \$2.30 to \$2.35. Carloads on dock are quoted at \$2.30.

Chicago, by Telegraph.—The manufacturers of Wire Nails met in this city last Thursday and advanced prices 5 cents per keg. It is understood that this advance was only made to jobbers and carried with it no advance to retailers. This will have the tendency of making jobbers' prices firmer, as the reduction of the margin offers less opportunity to cut. Trade continues very heavy and manufacturers are now falling in arrears on shipments. Single carloads are quoted at \$2.20 and small lots at \$2.25 to \$2.30.

St. Louis, by Telegraph.—The volume of business in the Wire Nail market is on a fair scale, and small lots from store are quoted at \$2.25.

Pittsburgh.—At a meeting of the Wire Nail mills, held in Chicago last week, an advance of 5 cents a keg was made in prices. This puts the price of Wire Nails at \$2.05 in carloads and larger lots, and \$2.10 in small lots, f.o.b. cars maker's mill. There has been heavy buying of Wire Nails in the last two or three weeks, but it is also true that a good many of the large trade covered their requirements prior to the advance in prices. The Wire Nail market is referred to by the manufacturers as being in a very satisfactory shape at the present time and it is believed the advanced price will be firmly held.

Cut Nails.—The price of Cut Nails was reduced by the Eastern manufacturers on the first of the month 10 cents per keg. This action was taken so as to make more of a difference between the price of Cut and Wire Nails than there has been for some time. The advance in the price of Wire Nails presented a suitable occasion for making a change in price. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....\$1.95
Less than carload lots..... 2.00

New York.—The reduction of February 1 in the price of Cut Nails has naturally affected the local market. New York quotations for carload and less than carload lots are as follows:

Carload lots on dock.....\$2.08
Less than carload lots on dock..... 2.13
Small lots from store..... 2.20

Chicago, by Telegraph.—The movement is only moderate. Small lots are still quoted at \$2.30, but a reduction in price is looked for which will enable Cut Nails to compete with Wire Nails.

St. Louis, by Telegraph.—A light demand rules the market for Cut Nails and quotations are without change. Small lots from store are quoted from \$2.30 to \$2.35.

Pittsburgh.—The Cut Nail Association met last week and made a reduction of 10 cents a keg in prices on Cut Nails. The reason for doing this was that Cut Nails have been slightly higher than Wire Nails, which has restricted demand to some extent, many buyers preferring Wire Nails to Cut Nails at even prices. We now quote Cut Nails at \$1.95, base, in carload lots, and \$2 in less than carload lots, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

Barb Wire.—No change was made in the price of Barb Wire on January 30, at which time Wire Nails and Plain Wire were advanced. Demand from mill continues good for spring delivery. Quotations for round lots are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.60; Galvanized, \$2.90; less than carload lots, Painted, \$2.65; Galvanized, \$2.95.

Chicago, by Telegraph.—Barb Wire factories are unable to keep up with the heavy demand for their product and the unusual experience for midwinter is now presented of shipments falling rapidly behind. The factories and jobbers have no reserve stocks, and a repetition of the great scarcity of last spring is again expected when the heavy spring trade really opens. Single carloads are quoted at \$2.80 for Painted and \$3.10 for Galvanized, with 5 cents extra for small lots.

St. Louis, by Telegraph.—A satisfactory business is being done in the market for Barb Wire, and prices are on the same basis as last quoted. Jobbers quote carload lots at \$2.95 for Painted and \$3.25 for Galvanized.

Pittsburgh.—At a meeting in Chicago last week no action was taken on Barb Wire. We note a satisfactory demand, considering the season of the year. We quote Galvanized Barb Wire at \$2.90 in carloads to jobbers and Painted at \$2.60, terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh. These prices are probably minimum of the market, and for small lots \$2 to \$3 additional is charged.

Plain Wire.—On January 30 Plain Wire and Fence Staples were each advanced in price 5 cents per 100 pounds. Demand is large, and the market is reported as being firm. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.00	\$2.35
To jobbers in less than carload lots.....	2.05	2.40
To retailers in carload lots.....	2.10	2.45
To retailers in less than carload lots.....	2.20	2.55

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9.....Base.....	\$0.40 extra
10.....\$0.05 advance over base.....	.40 "
11......10 " " ".....	.40 "
12 and 12½.. .15 " " ".....	.40 "
13......25 " " ".....	.40 "
14......35 " " ".....	.40 "
15......45 " " ".....	.75 "
16......55 " " ".....	.75 "
17......70 " " ".....	1.00 "
18......85 " " ".....	1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The volume of business in Plain Wire is fully maintained at its recent large volume. Jobbers are quoting small lots from stock at \$2.20, base.

St. Louis, by Telegraph.—Plain Wire is in good demand, and a very fair volume of business is being executed. Jobbers quote No. 9 at \$2.25 and Galvanized at \$2.65, with the usual advance for other sizes.

Pittsburgh.—At the manufacturers' meeting in Chicago last week prices of Plain Wire were advanced \$1 a ton. We now quote Plain Wire at \$2 and Galvanized \$2.35 in carloads, f.o.b. Pittsburgh, usual terms. For small lots from \$2 to \$3 a ton higher prices are charged.

Axes.—The conferences between the manufacturers of Axes, to which we have already referred, have been continued, and the indications are that something is be-

ing accomplished which will put the market in a much more satisfactory condition than has prevailed for some time. There is an increasing probability that the manufacturers will get together in a single company, in which their various interests will be consolidated. With a view to accomplishing this it is understood that options have been obtained on practically all the plants. An indication of the course of things is given in the fact that the manufacturers generally are refusing to accept orders for future delivery, and in some cases are intimating that in about ten days or two weeks they will be in a position to name prices. What the new prices will be is not yet definitely announced, but the impression prevails that they will be substantially higher than last season. It is believed, however, that the manufacturers will aim to pursue a conservative policy, and, while they may be in control of the market, they will endeavor to avoid the mistake of establishing unreasonably high prices, the effect of which would be to invite competition. At the same time, prices have been so low and the manufacture of goods attended by so little profit, that materially higher quotations would not be regarded as unreasonable. In efforts to secure this condition of things, manufacturers will have the approval of the trade in general, as the state of the market has of late been unsatisfactory and has caused more or less disturbance in trade.

Tinware, Galvanized Ware, &c.—The Metal Ware Selling Company have just been incorporated under the laws of New Jersey, with an authorized capital of \$250,000. The purpose of this organization is to sell Household Tinware, such as Galvanized, Tinned, Japanned, Pieced and Stamped Ware and Sheet Iron Goods, now made by most of the leading manufacturers of this character of merchandise. This company, however, will have no connection with anything pertaining to Enameled Ware. Negotiations are now in progress with various manufacturers, many of the details being in process of settlement. It is proposed to sell through this company the various lines of goods named above in somewhat the same way that Copper and Cordage are marketed. In view of the prospect of the consummation of an agreement between the manufacturers of these lines the market for the goods concerned has a decidedly firm tone.

Carriage Bolts.—Manufacturers of Common Carriage Bolts at their recent meeting adopted a revised list to take effect February 1. This list is given below, and is subject to the regular discount of 60 and 10 per cent.:

Length in inches.	1/4	5-16	3/8	7-16	1/2	9-16 and 5/8	3/4
1 1/2	\$1.00	\$1.20	\$1.60	\$2.20	...	...	...
1 3/4	1.04	1.25	1.68	2.29	...	...	...
2	1.08	1.30	1.76	2.38	...	...	...
2 1/4	1.12	1.35	1.84	2.47	...	...	...
2 1/2	1.16	1.40	1.92	2.56	\$3.00	\$5.20	\$7.20
2 3/4	1.20	1.45	2.00	2.65	3.11	5.37	7.43
3	1.24	1.50	2.08	2.74	3.22	5.54	7.66
3 1/4	1.28	1.55	2.16	2.83	3.33	5.71	7.89
3 1/2	1.32	1.60	2.24	2.92	3.44	5.88	8.12
3 3/4	1.36	1.65	2.32	3.01	3.55	6.05	8.35
4	1.40	1.70	2.40	3.10	3.66	6.22	8.58
4 1/4	1.44	1.75	2.48	3.19	3.77	6.39	8.81
4 1/2	1.48	1.80	2.56	3.28	3.88	6.56	9.04
4 3/4	1.52	1.85	2.64	3.37	3.99	6.73	9.27
5	1.56	1.90	2.72	3.46	4.10	6.90	9.50
5 1/4	1.64	2.00	2.88	3.64	4.32	7.24	9.96
6	1.72	2.10	3.04	3.82	4.54	7.58	10.42
6 1/4	1.80	2.20	3.20	4.00	4.76	7.92	10.88
7	1.88	2.30	3.36	4.18	4.98	8.26	11.34
7 1/4	1.96	2.40	3.52	4.36	5.20	8.60	11.80
8	2.04	2.50	3.68	4.54	5.42	8.94	12.26
8 1/4	2.12	2.60	3.84	4.72	5.64	9.28	12.72
9	2.20	2.70	4.00	4.90	5.86	9.62	13.18
9 1/4	2.28	2.80	4.16	5.08	6.08	9.96	13.64
10	2.36	2.90	4.32	5.26	6.30	10.30	14.10
11	2.52	3.10	4.64	5.62	6.74	10.98	15.02
12	2.68	3.30	4.96	5.98	7.18	11.66	15.94
13	2.84	3.50	5.28	6.34	7.62	12.34	16.86
14	3.00	3.70	5.60	6.70	8.06	13.02	17.78
15	3.16	3.90	5.92	7.06	8.50	13.70	18.70
16	3.32	4.10	6.24	7.42	8.94	14.38	19.62
17	3.48	4.30	6.56	7.78	9.38	15.06	20.54
18	3.64	4.50	6.88	8.14	9.82	15.74	21.46
19	3.80	4.70	7.20	8.50	10.26	16.42	22.38
20	3.96	4.90	7.52	8.86	10.70	17.10	23.30

Sheet Copper.—The price on Sheet Copper was advanced 2 cents per pound on February 2, making the base price 18 cents, the same as it was previous to January 23, 1902, when a reduction of 2 cents per pound, from 18 to 16 cents, base, was made. The reason for this action is the advance in Ingot Copper.

Copper and Brass Goods.—The advance in Ingot Cop-

per is having a marked effect on the price of Copper Goods. Copper and Brass Wire is slightly higher, and Soldering Irons are also held at advanced prices. Copper Rivets and Burrs are thus far unchanged, there not having been any advance since the recent reduction in the price. It is not unlikely that further changes will occur, and the market is being watched closely by buyers. Some houses are anticipating the probability of higher prices and are getting their orders in.

Yellow Metal.—The market price for the various forms of Yellow Metal, used largely for ship purposes, were advanced 1 cent per pound February 3 all around, as follows: Sheathing to 14 cents; Nails, when they go with Sheathing, 14 cents; same without Sheathing, 16 cents; Yellow Metal Dimension Sheets, 15 cents; Rods, 15 cents, and Circles, 18 cents. Old Yellow Metal in exchange for new stock is now 8 cents per pound instead of 7 cents as before.

Tacks.—The Tack market continues in an unsatisfactory condition. While there is some understanding between the manufacturers, especially in the West, prices are, as usual, uneven, and there is a good deal of variation in quotations named by different manufacturers.

Binder Twine.—Eastern manufacturers have not, as a rule, made any prices on Binder Twine for the coming season. In the majority of cases the above statement is made when answering inquiries for prices from buyers. Quotations have been, however, on the basis of 10½ to 11 cents for Sisal and Standard Twine, f.o.b. New York, with price guaranteed to date of shipment, May 1. There is not much disposition shown by buyers to place orders.

Cordage.—Rope is in light demand at unchanged prices for moderate quantities. Quotations differ with various manufacturers, as follows, on a basis of 7-16 inch and larger: Sisal Rope, 9 to 9½ cents; Manila Rope, 12½ to 13 cents, with ¼ cent per pound rebate allowed on large quantities.

Glass.—The Window Glass market is somewhat disturbed by a report that the Independent Glass Company have issued a circular to jobbers in which Glass is offered at 2½ per cent. below the price made by the combines. It is understood that the circular states that orders will be accepted subject to stock, and that the company are not accepting orders because they have little or no stock on hand. This movement is looked upon by those friendly to the combine as an effort to unsettle the market. The advanced cost of production, it is stated, has resulted in the importation of foreign Glass, which was not unlooked for when the present prices were made. It is reported that the Co-operative Federation are about securing a charter for a sales agency in New Jersey, with a capital of \$600,000. Over 800 pots are said to be represented, and that a strong organization representing East and West has been formed which will work in harmony with the American Window Glass Company. A new contract, it is understood, has been made between the Pittsburgh Plate Glass Company and the original members of the Co-operative Federation, by which the Pittsburgh Company have contracted for their output for the balance of the fire at the rate of 89½ per cent. off the manufacturers' list. Last season the Federation sold their output to the Pittsburgh Company at 4½ per cent. under the American and Independent prices. The following are the quotations of the Jobbers' Association:

	Discount.
From store	90 and 10 %
F.o.b. factory, carload lots:	
Single strength.....	90 and 10 and 7½ %
Double strength.....	90 and 10 and 10 %

The following comparison of discounts from the manufacturers' and Jobbers' Association lists may be of interest to the trade. The manufacturers' discounts are supposed to be what the Jobbers' Association placed their order at with the manufacturers for 500,000 boxes on January 24, 1902. From the manufacturers' list 89 and 2½ per cent. is equivalent to 90 and 20 per cent. from the Jobbers' Association list, and 89 and 5 manufacturers' list is equivalent to 90 and 20 and 2½ jobbers' list.

Pacific Retail Hardware Association.

THE fourth annual meeting of the Pacific Retail Hardware Association convened at Nevada City, Cal., January 15 and 16. Nevada City being a town in the Sierra Nevadas, it was feared at one time that the storm conditions might interfere with the attendance, but the weather was unusually pleasant and the attendance of the retail trade, the wholesale and manufacturing interests and implement dealers was large.

The meeting was a very satisfactory one. Upon the arrival of the train which brought the greater number of the members a committee, consisting of Geo. A. Legg, Elam Biggs, A. F. Brady, J. M. Hadley and other citizens of Nevada City and Grass Valley, met and welcomed the visitors in a most cordial manner.

Promptly at 9.30 a.m. Wednesday, in the fine room of the Masonic Hall, the convention was called to order by the president, when the following firms and members responded:

Adkins & Drane, Red Bluff.
R. M. Beebe, Gridley.
Bills & Putnam, Oroville.
Billiou & Applegate, Saint John.
J. P. Burbank, Anderson.
J. E. Boorman Hardware Company, Marysville.
R. B. Cranston, Woodland.
Ed. G. Carter, Cottonwood.
W. M. Doty, Biggs.
Denny-Bar Company, Scott Valley.
Elam Biggs Hardware Company, Grass Valley.
Eppinger & Co., Dixon.
Estate G. W. Freeman, Willows.
J. Grover, Colusa.
B. P. Grover, Williams.
T. B. Gibson, Woodland.
Hampton Hardware Company, Marysville.
L. L. Hubbell, Chico.
Hubbard, Earle & Co., Chico.
Robert J. Hancock, Auburn.
Hochheimer & Co., Germantown.
John Haenny, Lincoln.
L. O. Johnson, Arbuckle.
J. D. Johnson, Dixon.
R. O. Kimbrough, Sacramento.
Kaufman Bros., Corning.
H. D. Knight & Bro., Elk Creek.
Estate J. P. Klemmer, Willows.
Legg & Schaw, Nevada City.
Lyon & Garrett, Red Bluff.
McCormick-Saeltzer Company, Redding.
J. A. McFeely, Chico.
Mitchell & Son, Colusa.
C. J. McBride, Lincoln.
A. L. Nichols, Chico.
R. Noell, Grass Valley.
Scribner & Murdock, Orland.
John L. Swank, Colusa.
John Simpson, Tehama.
A. C. Stagner, Wheatland.
Benjamin Smith, Maxwell.
Lewald & Schlueter, Fresno.
Geo. E. Turner, Nevada City.
White, Cooley & Cutts, Marysville.
H. A. Scribner, Durham.
W. E. Hawkins, Ager.
H. G. Dorsch, Quincy.
M. Q. Meehan, Placerville.
Pioneer Hardware Store, Placerville.
E. I. Reid, Junction City.
Fred. A. Autenreith, Yreka.
S. Sweet & Co., Visalia.
Dinkelspiel Bros., Bakersfield.
Redlick Bros., Bakersfield.
L. N. Wood, Visalia.
Linder Hardware Company, Tulare.
Bakersfield Hardware Company, Bakersfield.
A. Young, Tulare.
Barrett-Hicks Company, Fresno.
Donahoo-Emmons & Co., Fresno.
Turner Hardware Company, Modesto.
W. B. Wood & Son, Modesto.
Ruhl Stove & Hardware Company, Stockton.
A. Watkinson, Corning.
E. F. Reichman & Co., Fort Jones.
Brady & Cassidy, Grass Valley.
G. H. Knight, Adin.
Bird & Dinkelspiel, Colinsville.
Thomas Jones, Hornbrook.
E. B. Cavanaugh, Edgewood.
Ophir Hardware Company, Oroville.
Francis & Johnson, Auburn.
Owen Sullivan, Colusa.
Lord & Murray, Woodland.
J. F. Brown, Rio Vista.

There was also a delegation from the San Francisco and Oakland Retail Hardware Association, consisting of C. H. Philpott, M. M. Brown, H. A. Bennett and Edwin Jones, and a delegation from the newly formed Central California Retail Hardware Dealers' Association, consisting of E. A. Eaton of Ford, Sanborn Company of Salinas, and Mr. Smith of Lompoc, Cal.

A telegram was received from O. F. Sites, president of the California State Retail Hardware Association, regretting his inability to be present owing to sickness.

Before the proceedings were opened Geo. A. Legg of Nevada City delivered an address of welcome on behalf

of the citizens of Nevada City and Grass Valley. He remarked that the citizens had shown a great interest in

this meeting, and every one would help to contribute to the pleasure and comfort of the visiting delegates. He extended to all who were interested in the great mining developments of the district an invitation to inspect the works of the different companies, and intimated that the several managements would afford every facility for gratifying the curiosity of all those who desired to make a personal inspection. He concluded by inviting all the visiting members and friends to a banquet on the following evening, after the labors of the convention had been brought to a close.

The president, on behalf of the convention, thanked Mr. Legg and the citizens for the hearty welcome tendered, remarking that the reputation of California for liberal hospitality was worldwide, and, notwithstanding that he was a citizen of the valley, he was obliged to admit that the mountain men even excelled the people of the valley in that noble and generous characteristic.

The president then delivered the following address:

President's Address.

I am glad to be with you all again on this occasion, the fourth annual meeting of our association, and feel highly honored at being chosen so many times president of the convention.

I have also great satisfaction in meeting and extending a welcome to the representatives of kindred associations which have been formed in the various sections of the State, whose objects and aims are similar to ours, and who will participate with us in discussing matters of mutual interest. Exchange of ideas is educational and instructive and ought to keep us on the onward movement.

Business life is always a sharp struggle for success, and of right it should be, and the great law of the survival of the fittest applies to business men as well as to natural creations. Then let us fit ourselves for the struggle as best we can, and there is no better way than to learn from each other data got by experience, so that we can profit thereby.

ONE OF THE GREAT RESULTS

of our annual conventions is the fact that we become acquainted with each other, and it is a matter of congratulation that competition, which often means personal jealousies and frequently bitter antagonism, has in most instances, where the principles of our association have been recognized, given way to generous rivalry. We have learned to trust one another and become more faithful to ourselves and our interests.

The tendency of the age is to unite. "In union there is strength" seems to be the text taken up and acted upon. The Hardwaremen of California seem to have been about the last to come together on those lines. Every trade and calling in the great cities of America and elsewhere has its organization, from the laborer to the professional man. They meet and discuss and adopt rules for their guidance and stand together for the common good, and do what they can to correct abuses or redress grievances.

ORGANIZED EFFORT.

In the Hardware trade, which is divided into three classes—the manufacturer, the jobber and the retailer—we find that the first two have strong organizations, and unless the retailer sees fit to look after his interests through the medium of organized effort he will soon find that he will be deprived of his due compensation as the chief distributor. The retailer has the hardest work, takes the most risks and is the poorest paid factor in the Hardware trade; therefore it is your duty to put all the life and enthusiasm into the association you can. No great success was ever attained without some enthusiasm; the more enthusiasm the more success. The man who never can see any good in anything that does not give him an immediate profit, and who habitually throws cold water on any new proposition, never makes a success of anything. It is the man who is enthusi-

astic and willing to try and do something who makes the greatest success in any undertaking. It is far easier to criticise and find fault than to originate and perform. It was enthusiasm which prompted Columbus to set sail for the Indies when he discovered America; it was enthusiasm which carried Napoleon safe over the bridge at Lodi and made him great; it is enthusiasm which prompts the Hardware clerk to get a few dollars together and start a small store for himself—which most of us have done. Therefore, gentlemen, get up an enthusiasm for our association. Talk it over among yourselves when you meet. If you have a grievance, write to the secretary and it will be attended to and the grievance redressed. Let us stand together with enthusiasm and we will get all we ask in reason.

So with our association; let us try and get together and do something, even if we don't attain our object, and keep on trying until we do or know the reason why. If one plan does not succeed, try another, and discourage those cold water throwers and those who are content to sit with folded arms and take what comes along,



JOHN C. WHITE, President.

for we all know the old saying, "Blessed is he that expecteth nothing, for he won't be disappointed."

COMBATING CONSOLIDATIONS.

At our last meeting attention was called to the vast aggregations of capital, unprecedented in the history of trade, manufactures and finance, which are formed for the purpose of controlling the output of iron, steel and raw material which form the base of goods manufactured for the Hardware trade. The idea was expressed that the distributors of manufactured goods would not get their fair share of the cost of distribution, and the extra savings in production, which it is claimed by the various syndicates will be effected by the great consolidations, will not be distributed in such manner as to benefit the consumer; and it is feared that many lines of Hardware will be reduced to the grade of profit of Nails, Wire, Rope, &c., owing to the absence of competition, and will add greatly to the list of staples which do not yield a proper compensation to the distributor. If we are to have large aggregations of production, operated and controlled by syndicates or individuals for their benefit, the only way the distributor can have a word to say will be in an equally large aggregation of purchasers, to whom the manufacturers must look for the distributive energy in supplying the wants of the consumer, for the laudable purpose of protecting him from overexactions and the assurance of a living margin of profit, which the distributor is justly entitled to. This can only be attained by organized effort through the medium of associations such as ours. This fact seems to be recognized by kindred associa-

tions which are formed and now in existence in every State in the Union, as evidenced by the reports which appear in the trade journals.

The tremendous power of these great syndicates is such as to stagger the individual who contemplates the situation or who attempts to form a plan to hold them in check. Time alone can solve the question, but we must do what we can to uphold our interests as distributors and fight for our fair share of recognition.

Matters of great interest will no doubt be brought before the meeting. The events of the past year will be reviewed and discussed, and the plans of this association for the coming year will receive your attention. The Executive Committee will present its report and give an account of its stewardship, which I trust will be satisfactory. You will be told what has been done and attempted to be done, and any suggestions toward better conditions will be accorded proper recognition.

In conclusion, I trust you will be impressed with the idea of being faithful to yourselves and to the association, that your deliberations will be marked with mutual consideration and forbearance, that a broad policy will be preserved as heretofore, and that much good will result from the fourth annual meeting of the Pacific Retail Hardware Association.

The next order of business being the report of Executive Committee, the same was read by Vice-President Oscar C. Schulze of Dixon, which was as follows:

Report of Executive Committee

Your Executive Committee begs most respectfully to submit its third annual report.

After being appointed at the last annual meeting your committee met and organized at the Lick House, in San Francisco, on February 11, 1901, taking into consideration the various subjects delegated to it.

Pursuant to the resolution adopted at our last annual meeting, your committee invited the California Wagon, Vehicle and Implement Association to a conference, which was held in Anvil Hall on February 12, 1901. The subject was then very freely discussed, and the unsatisfactory conditions prevailing, owing to the competition of the wholesale trade with the interior merchants on Wagons and Implements, were fully explained by your committee.

UNIFORM PRICE-LIST ON WAGONS.

The solution of the difficulty appeared to your committee to be to adopt a uniform price-list for Wagons by all manufacturers, agents and jobbers on the coast, which was eventually agreed to; and the agreement regarding the sales of Wagons was entered into, whereby the country dealer could sell Wagons at the San Francisco price with freight added to his particular place, receiving a small differential as his commission.

This agreement was clearly defined in our confidential communication to our members under date of May 9, 1901, since which time it has continued in effect with more or less satisfactory results according to the action of the local dealers and their confidence and maintenance of understandings among themselves.

It is very gratifying to your committee to be able to report that no breach of faith by the manufacturers or jobbers has come under its notice. The only difficulty your committee has experienced has arisen in harmonizing the views of our members and clearing up petty jealousies and misunderstandings.

It is the duty of your committee again to call your attention to the great difficulty it experienced in harmonizing the views of the wholesale dealers and the adoption of a uniform list, and it feels that unless this agreement is lived up to by all the members of our association especially, without any reservation whatsoever, it will be nearly impossible to bring about any agreement or understandings in the future, and conditions will again revert to unprofitable business.

ON THE QUESTION OF IMPLEMENTS.

Your committee found that there was such a variety, both as to quality and price, that it was quite impossible to adopt a uniform list.

Your committee recommends that the local agent of

any particular Implement, such as Plows, Mowers and other machinery, should, in every instance, obtain the lowest retail price in San Francisco or Sacramento, and add freight to his store, not selling at less than those figures. If this is conscientiously done, it will tend to increase the confidence of the consumer in the local merchant and keep the trade in its proper channel.

EXTENSION OF DIFFERENTIALS

On the subject of the extension of the differentials, your committee took the matter up a number of times with the several chapters of the Pacific Coast Hardware and Metal Association, and has to report that it succeeded to some extent in widening the differentials on Pipe and Horseshoes, particulars of which have been sent you. We have also succeeded in maintaining the already existing differentials, and are in hope that our efforts in behalf of the differentials on Bolts, Nuts, Washers and Shovels will be agreed to and go into effect in the very near future.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION.

In accordance with a resolution adopted at our last annual meeting this committee met the Executive Committee of the San Francisco and Oakland Retail Hardware Dealers' Association, and in joint session the plans of organization of a State Association were formed and brought into existence under the name of the California State Retail Hardware Association, with headquarters in San Francisco, under the presidency of O. F. Sites, the other officers being as follows: G. A. Gutman, vice-president; Henry Gracy, secretary; Frank Osborne, treasurer, and an Executive Committee. A copy of the constitution and by-laws has already been mailed you.

Our association, through your committee, has joined the California State Retail Hardware Association, in accordance with the powers delegated to it at the Woodland meeting, and has paid the necessary dues.

SAN JOAQUIN VALLEY RETAIL HARDWARE ASSOCIATION.

A delegation of the said State Association, consisting of O. F. Sites, G. A. Gutman and John C. White, visited Fresno, where a meeting of the dealers of the San Joaquin Valley was held, and assisted in the formation of the San Joaquin Valley Retail Hardware Association, which has been organized there.

CENTRAL CALIFORNIA RETAIL HARDWARE DEALERS' ASSOCIATION.

Your committee has also to report that it was joined at its last meeting in San Francisco by a delegation from the Central California Retail Hardware Dealers' Association, consisting of Mr. Eaton of the firm of Ford, Sanborn Company, Salinas, and R. P. Lathrop of Grangers' Union, Hollister, whose object was to confer with us regarding the working of our association, and to learn from us how far we had advanced in correcting the various abuses which had grown into the retail trade and to profit by our experience in promoting the work which they had set themselves out to perform. Your committee explained fully to them what it had done and what it was trying to accomplish, and is pleased to learn that a strong association has been formed in that part of California.

SOUTHERN CALIFORNIA RETAIL HARDWARE ASSOCIATION.

The committee also learns with satisfaction that a retail association has been formed in that part of California south of Tehachapi, known as the Southern California Retail Hardware Association.

We have therefore to congratulate ourselves on the spread of the association work, modeled in a great measure after our association.

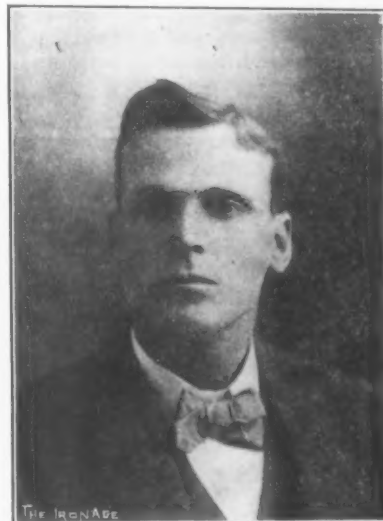
The committee has to report that a very unhappy and unsatisfactory condition exists in the trade from Redding to the Oregon line. At our conference with the jobbers in February last we invited Mr. Saeltzer and Mr. Johnson of the McCormick-Saeltzer Company of Redding to be with us, with the view of trying to harmonize the conflicting interests which had arisen in that locality between the jobbers and that firm, and, although your committee has exerted itself to a great extent to try and bring these interests together, it finds it

impossible up to this point, and from all we can learn the breach seems to be widening and extending instead of narrowing.

CLASSIFICATION OF BLACKSMITHS, MACHINE SHOPS, ETC.

Your committee, having taken a great deal of trouble to properly define the classification of blacksmiths and small boiler and machine shops, and also that of general stores which are established by large mining and saw mill companies, in remote localities, feels that it has settled every question of that nature which was brought before it, and from the absence of complaints feels to some extent assured that no friction exists; it if does, it has not been brought to the committee's notice.

Your committee has to report that, in all its interviews with the various chapters of the associated Hardware trade in San Francisco and Sacramento, it has been met with the greatest courtesy, and it feels that the wholesale trade of San Francisco and Sacramento has done what it can to meet our wishes and everything consistent with the object of retaining the trade on the



F. B. GIBSON, Member Executive Committee.

coast and meeting the competition of the Eastern and Middle West jobbers.

A WORD FOR "THE IRON AGE."

We have to extend our thanks to *The Iron Age* for its advocacy of trade associations, and the consistent attitude it has assumed on this question. Its reports on the market we have found reliable and intelligent. It has published not only the proceedings of our association, but we notice in its columns a synopsis of the proceedings of many Eastern associations, from which valuable hints have been obtained. We want to thank them for their generosity in supplying us with 1000 copies in pamphlet form of the report of our third annual meeting.

DELINQUENT MEMBERS.

It is with regret that your committee has to report that there are a few of our members who are delinquent in their dues. They have received and participated in the benefits of membership, have been duly informed as to the market changes from time to time, and have been protected by the wholesale trade; and, although notified by our secretary a number of times, they have not responded.

The committee desires to be instructed as to what action should be taken in these cases, as the by-laws do not provide any remedy.

Your committee has prepared a programme in accordance with the by-laws, copies of which have been mailed you.

A subcommittee, consisting of Geo. A. Legg, Elam Biggs, A. F. Brady and J. M. Hadley of Nevada City and Grass Valley, has been appointed to make provision for your reception at this, the occasion of our fourth annual meeting.

The committee feels that the well-known hospitality

of the mountain men of California will be upheld by these gentlemen.

JOHN C. WHITE,
OSCAR C. SCHULZE,
G. A. GUTMAN,
GEO. A. LEGG,
ROBERT W. BOYD,
Executive Committee.

On motion the executive report was received with acclamation and order placed on file.

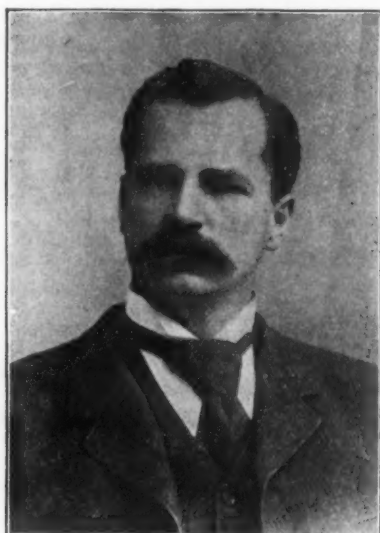
Vice-President Oscar C. Schulze of Dixon, Cal., read a very interesting paper on "Reciprocity in Trade," which will be given in full in our next issue.

A valuable and instructive paper was read by G. A. Gutman of Germantown, Cal., on "Sub-organization."

A. F. Brady read a very interesting paper on the "Social Side of Business Life," as follows:

The Social Side of Business Life.

It is my endeavor to present to you a few thoughts on the Social Side of Business Life" as I have found them during my career as a clerk and business man, with the idea of calling your attention to a very important factor in business, and I trust that during the course of my remarks you may at least find a thought



OSCAR C. SCHULZE, Vice-President.

to place on the credit side of your profit and loss account when you return home.

As you glance back over the years in your business life you will find two very important factors that have helped to make your business career a success. One is hard work, coupled with judgment, and the other is social work, a recreation in a measure, but a necessary factor in your business life.

Your first instructions upon taking a position behind a counter were to keep yourself neat and clean and be polite and pleasant to customers. This is the first phase of the social part of business and a very essential one for encouraging trade.

The next step is to meet socially people during business hours, and also outside of business hours, who may become customers at some time or another, and this calls you to take an active interest in the "social world," as we may term it, to know people and to become known.

You must learn to meet people easily, study their habits, understand human nature and be able to rely on your own judgment as to their responsibility, or suffer by experience with them.

KEEPING IN TOUCH WITH PEOPLE

Progressive business men must keep in touch with the times that are ever changing, and to do so they must keep in touch with the people. In order to do this they must take an active part in the various affairs that affect the social and moral welfare of the city or town

in which they are doing business, and identify themselves in every way possible with its common interest.

They are at their place of business from early morn until late at night, and in order to attend to the social calls and other outside duties, they must take the time from their business, or else they are obliged to neglect them entirely. Both conditions are unsatisfactory and there should be a remedy. We must have time for business and we must have time for the social side.

CHANGE OF EMPLOYMENT AND RECREATION.

Our minds and bodies are so constituted that each must have change of employment—recreation—new thoughts.

You may be able to move along and bear the great strain of work, work, work, while youth and strength are yours, but you are not building either a strong body or a strong mind for the latter years of your life, and for the time when the accumulated business interests demand a clear and ready mind to direct, at least, those who may be performing the labor for us.

Now, gentlemen, let us think of this matter seriously while we are young and active; let us go away from this association of to-day with the determination that while we are building a good, firm business structure, we will at the same time make a beautiful social structure of home which will be a bulwark for the nation's defense, the strength of a nation's safety.

A few years ago you would see men who had got into ruts and grooves, who had neglected everything in the way of business progress to make money, and who had succeeded in their effort in making a fortune, but who recalled, when it was too late, the neglected opportunities of the past.

In speaking to the assembly here at the present time let me say to you that we must educate ourselves in other lines than Hardware if we wish to make a successful business career for ourselves. We must free ourselves from the chains of business cares and give a portion of our time to the social and intellectual department of business. Our social calls are imperative and demand a portion of our time and attention; and not only that, we must take recreation and pleasure as we go along in life.

EARLY CLOSING.

Now, as a solution to this problem, let me suggest, if you are not already in line, that you join in promoting an early closing movement, and I want every person within range of my voice to give the matter serious thought, not only here, but at home and at your place of business.

If possible get the merchants to close at 6 o'clock, and if not that early agitate the question and get them to close as early as possible, as it then gives you time for your social duties without interfering with your business, and *vice versa*.

We have had a trial of closing at 6 o'clock for a little over a month in the furniture, Hardware and grocery stores in our city of about 7000 inhabitants, and have found that it has proven satisfactory, as it has in a great many other cities throughout the State. At the first of the year we were successful in getting other lines of business to agree to closing their stores at the same time.

We find that it gives us time to read the daily papers and trade journals and keep abreast of the times, and to become acquainted with the market and the conditions that affect it. We find time to meet our friends socially and get acquainted with our competitors.

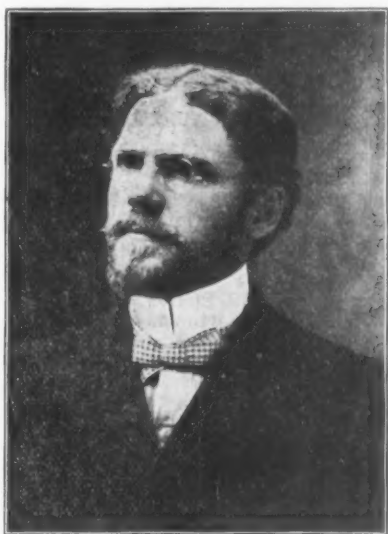
A married man can become acquainted with his family, and we can all find time to attend to the various duties that in the past we have attended to by stealing time from our business.

You will find some complaint on the part of a few customers on early closing, because we cannot all see things in the same light at the same time, but the customers, as a rule, will see the justice of the situation and conform with the new custom without a protest.

The time is not far distant when you will see the 6 o'clock closing movement general throughout the State, as it is a practical solution of the condition governing

the social and working hours of business and is a step toward the advancement of a progressive age.

Under the best conditions we can establish there must be exceptions, and my advice to all of you is to violate that rule and attend the meeting of the Pacific Retail Hardware Association as a part of our social and business duty. We come in touch with men who are in the same line of business—good, social, broad minded fellows—who are always willing to give you ideas that they have found valuable in business, and to exchange ideas with the wholesalers and learn conditions that exist, that without co-operation we would some of us never know or attempt to govern, and in doing so I feel



ROBERT W. BOYD, Secretary.

that we can attend these meetings and return home from the same feeling fully repaid for the time and expense of such a trip, stolen from business as it were, and give a big credit mark to "the social side of business life."

Credits and Collections.

An interesting paper on "Credits and Collections" was read by T. B. Gibson of Woodland, Cal., as follows:

I am not going to burden you with any extended remarks, but will briefly give you my views upon a question which I consider of vital importance to every business man.

The subject of credits and collections is one that requires a great deal of thought from the head of every business house, for upon the judicious granting of credit and the prompt collection of bills depends the success of every business.

The best method of doing this no doubt has been a perplexing question to every member of this convention, and I think that the solution of the problem depends very largely upon organization and unity of action between business men generally.

AFTER HARVEST TERM OF CREDIT.

I know of no greater good that this association can do than to establish some rule for country merchants to follow in extending credit to customers. The after harvest term of credit, which obtains to a great extent throughout the agricultural districts of this State, should be abolished if possible, and something more of the same terms established between merchants and customers as now exist between the retailers and jobbers.

Year by year we have seen the margins on goods getting smaller, and for that reason I believe that the terms of credit should be made shorter. The trouble is that one merchant continues on the same old methods simply because his competitor in business does the same thing, and, as a result, loses a great deal of money which might have been saved had there been a better understanding between merchants upon the matter of granting credit and making collections. I know this to be a

fact, for I have had some rather sad experiences myself in selling goods without taking the proper precautions.

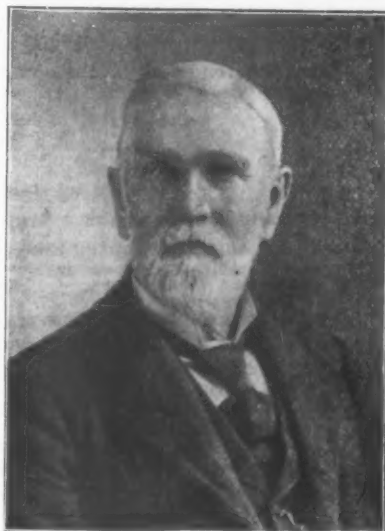
CHARGING INTEREST ON OVERDUE ACCOUNTS.

I believe that a strict rule should be established that all accounts should be settled at least once a year, and a rate of interest fixed to be charged on overdue accounts. You will find quite a number of people who will object to paying interest on their overdue accounts, but they do not seem to consider that the merchants have to do the same thing, and that the money thus tied up is virtually taken out of their business and lying idle. Merchants seldom make anything by carrying an account over from one year to another, and you are more likely to retain a man's trade by insisting on a settlement each year.

It is a mistaken idea that you will get all of a man's trade simply because he owes you an account, or because you have allowed him to settle by giving you his note. One man will run an account with you with the understanding that he will pay after harvest, or at the end of the year. If at that time he finds that he cannot do so, he is willing to settle any way he can, and will go on trading with you; while, on the other hand, another man, who is perfectly good financially, will run a large account with you, and after harvest you will send him his bill. He will not come near you, nor offer to settle, and the next thing you will see him buying his Hardware from one of your competitors and giving you the go by completely. Then you can't help but think of man's ingratitude, and will probably get a little angry and say some things that would not sound well in polite society.

AN ILLUSTRATION.

A short time ago a man whom I carried over last year, and who had not traded with me since, came into my store. When I spoke to him about his account and asked him why he had not been giving me his trade, he said as he already owed me quite a bill he did not like to make it any larger. When I asked him if he did not consider that he was under some obligation to give me his patronage, since I had accommodated him by carrying



WM. EARLL, Treasurer.

him over, he said he had never looked at it that way, but thought, perhaps, I was right about it.

VIRTUE OF A CASH BUSINESS.

It is such things as these that make a merchant long for a cash business where such unpleasant things are unknown. So I believe we should get as near a cash system as possible.

I think that our Eastern brother in the Hardware business is more successful than we from the fact that he does almost a cash business. All of the dry goods merchants of my town, with one exception, are doing a cash business. They have learned by experience that it is the best system.

AN ATTORNEY TO LOOK AFTER CREDITS.

I believe that the merchants who do a credit business should form an organization in every town and establish rules for their own protection, and also employ a competent attorney at an annual salary, whose duty it would be to look after the financial standing, as far as possible, of the people in the community, and make a report to the organization whenever required, and also to bring suit when necessary to sue a man. Another very wise precaution is for every merchant to get the daily reports of the filings in the Recorder's office, thereby keeping himself posted on the real estate transfers, mortgages, &c. Banks very often get the advantage of the merchant by taking crop mortgages. The result is that the merchant furnishes the goods, and in the event of a small crop, it takes it all to satisfy the bank's mortgage, and the merchant loses his bill. It seems to me a very good plan, where a crop mortgage is given, to have the mortgagee stand good for what the farmer may need in putting in and harvesting his crop.

MERCHANTS SHOULD HELP EACH OTHER.

It is too often the case that the banks and landlords take everything in sight and leave the poor merchant to get what he can, which is usually nothing. This would not be so if merchants would stand together in such matters, lay aside petty jealousies, and remember that the only way to help themselves is by helping one another.

I do not suppose that where a credit business is done a plan can ever be perfected which will entail no losses whatever, but I believe that the present system, or, more properly speaking, the lack of system, which prevails to-day can be greatly improved. It will require the combined efforts of the business men of the Sacramento Valley to bring about the changes I have suggested, but I believe it can and should be done.

I have no doubt you have all had similar experiences to my own, and probably some of you have already inaugurated reforms. If so, I hope you will give this convention the benefit of your experience along that line.

I believe this is one of the most important subjects that can be brought before this convention, and I hope it will not be dropped, but some action taken looking to a betterment of present conditions.

These papers were kindly received by the convention, and a vote of thanks tendered to the gentlemen for same.

The selection of a place for holding the fifth annual meeting being next in order, on motion of T. B. Gibson the city of San Francisco was chosen, when it would be the expectation and aim to hold a joint convention of all the retail Hardware associations in the State.

Election of Officers.

The election of officers for the ensuing year being in order, the following were unanimously chosen:

John C. White, president, Marysville, re-elected.
Oscar C. Schulze, vice-president, Dixon, re-elected.
Wm. Earll, treasurer, Chico, re-elected.
Robt. W. Boyd, secretary, Marysville, re-elected.
A. F. Brady, member Executive Committee, Grass Valley.
T. B. Gibson, member Executive Committee, Woodland.

The chairman reappointed the Auditing Committee, consisting of Elam Biggs, Grass Valley, Cal.; John Simpson, Tehama, and J. F. Sersanous, Willows, Cal.

Conclusion of Convention.

Our next issue will contain a report of Thursday's proceedings, and the banquet with which the convention closed. The meeting was a notably successful one, and the association is to be congratulated on its position and usefulness.

ANNOUNCEMENT is made that the business for so many years conducted by C. W. Dunlap, 108 Chambers street New York, has been incorporated under the style of C. W. Dunlap Mfg. Company, Chas. W. Dunlap being president and Willis W. Ferry secretary and treasurer. The company will continue the manufacture of Kitchen Hardware, Garden and Mechanics' Tools, with increased capital and facilities, so that they will be in better position to meet the demands of the trade than heretofore.

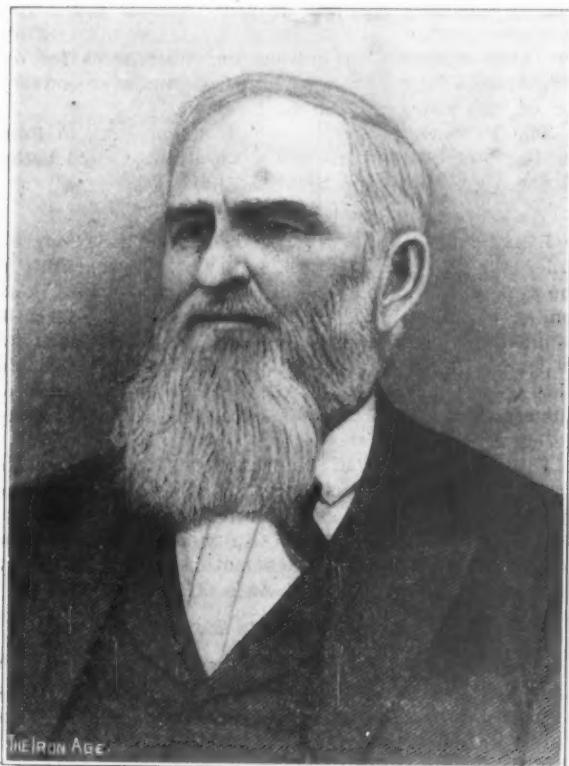
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DEATH OF CHARLES PARKER.

CHARLES PARKER, president of the Charles Parker Company, Meriden, Conn., died at his home in that city Friday, January 31 and was buried from the First Methodist Episcopal Church, of which he was a member, the following Sunday. Although Mr. Parker was in his ninety-fourth year, he had been in fairly good health until recently. Three weeks ago he caught cold and suffered from an attack of the grip, from which he was gradually recovering. He retained his full mental faculties until a few hours before his death. The portrait here given is from a photograph taken when in his ninetieth year.

Charles Parker was born in Cheshire, Conn., January 2, 1809. When nine years old he was placed with a farmer named Porter Cook, where he remained until he was 14. He continued at farming until he was 18, when he was employed by Anson Matthews, Southington, Conn., casting buttons. Remaining there a year he re-



Chas. Parker

moved to Naugatuck, where he worked for about six months.

In August, 1828, Mr. Parker went to Meriden and hired out to Patrick Lewis making Coffee Mills. In December, 1829, he went into business for himself with a capital of \$70, taking a contract from Lewis & Holt for 13 months to manufacture Coffee Mills. During that period Mr. Parker cleared \$1300. He then took as a partner Jared Lewis, and took another contract from the same people to manufacture Coffee Mills, Ladles and Skimmers.

In January, 1831, he sold out and bought an acre of ground near his present residence, on the back of which lot he built a shop, which was finished in the spring of 1832. Here he manufactured Coffee Mills and Waffle Irons. About this time Mr. Parker began to market his own goods.

In November, 1833, Lewis & Holt failed, this occurrence leaving the entire market in Mr. Parker's hands. In 1833 he associated with his brother, Edmund, and Heman White, carrying on the business until 1835, when Edmund Parker was sent to Montgomery, Ala., with Clocks and dry goods. In 1836 he returned, and Mr. White went to Montgomery with dry goods, which sold readily.

In October, 1837, a second trip to Alabama was made with a large stock of dry goods; but the hard times which followed caused them to lose heavily, much embarrassing the firm of Parker & White, who did not recover from its effects for over six years. Although advised to fail they did not, but paid in full with interest. During this time Edmund Parker sold out his interest to Mr. White, and in 1843 the partnership was dissolved.

Mr. Parker's business ability steadily increased, and in 1844 he added largely to his buildings, putting in steam power, having previously used horse-power. He was the first to manufacture Plated Spoons and Forks and Plated Hollow Ware in Meriden.

In 1877 the several industries controlled by Mr. Parker were to a certain extent combined, and the Charles Parker Company or corporation formed, so that Mr. Parker might be relieved of many arduous duties. Besides the main Parker plant, other concerns in which he was the principal owner and which are controlled by the Parker interests are: Parker Brothers, manufacturers of the Parker Shotgun; the Meriden Curtain Fixture Company, and the Parker Clock Company. The Charles Parker Company have factories also at East Meriden for making Cabinet Locks, Tea, Table and Basting Spoons, and at Yalesville for making Piano Stools, Coffee Mills and Packing Boxes.

Mr. Parker's liberality in church matters and charitable enterprises was marked but unostentatious; whenever he conferred a favor he endeavored to conceal it from outsiders. He gave to the Methodist congregation of which he was a member the lot on which their first church was built, and three-quarters of the cost of that building. He and his brother, John, jointly contributed between \$30,000 and \$40,000 toward the erection of the present Methodist Church.

Mr. Parker always refused to accept office, though often urged to do so, until Meriden was incorporated a city, when he was elected Mayor, which office he held two years.

Mr. Parker was married October 6, 1831, and had ten children, the youngest son, Dexter Wright Parker, being graduated from West Point in 1870. The latter and his sister, Mrs. William H. Lyon, are the only surviving children.

For the past few years the burden of management of the diverse Parker industries has devolved on William H. Lyon, Mr. Parker's son-in-law, under whose direction the business has been very prosperous.

Mr. Parker's success in life was owing not only to his ability, but to strict economy and close application to business; he often working 15 hours a day, attending to his large correspondence evenings. He was distinguished for good sense, great industry, method in business and punctuality in all his engagements. He often recalled with considerable pride the first dollar he earned, which was obtained by picking thorns as a boy from brushes in the field and selling them to the owner of a mill in Wallingford for carding wool, the thorns being used to pin the cards of wool together.

HUBBARD & CO.

HUBBARD & CO., Pittsburgh, in connection with their line of Shovels, Spades and Scoops, Railroad Track Tools, Heavy Hammers and Sledges, Coal Miners' Tools, Washers, Crow Bars, Telephone and Telegraph Line Construction Supplies, &c., have installed the necessary machinery and are now manufacturing a full line of Hinges. A circular just issued gives their price-list on light and heavy Strap Hinges, light, heavy and extra heavy T Hinges, long Chest Hinges, Hinge Hasps, Crate Hinges and Crate Hasps.

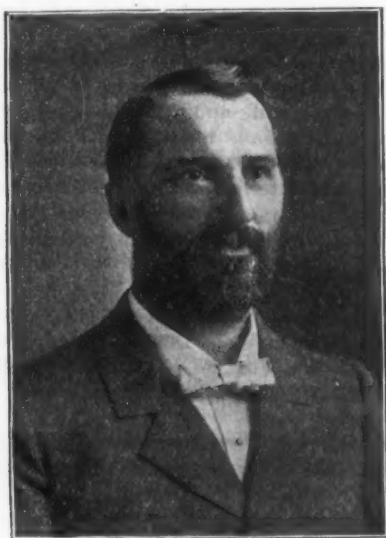
We are advised that Louis Kuehn, formerly secretary and manager of the La Crosse Steel Roofing & Corrugating Company, La Crosse, Wis., has recently resigned his position and disposed of his interest in the company, so that he is now no longer connected with the company.

WISCONSIN RETAIL HARDWARE ASSOCIATION.

THE sixth annual convention of the Wisconsin Retail Hardware Association is now being held at the Republican House, Milwaukee, the opening session being held on Wednesday forenoon and the closing session on Thursday afternoon. We go to press too early to chronicle any of the routine proceedings, but through the medium of advance copies are enabled to present President John Hessel's annual address, Secretary C. A. Peck's annual report and H. C. Scofield's interesting paper on the "Care, Management and Display of Retail Hardware."

The President's Address.

We come together to-day for our sixth annual convention. Since our last meeting a great calamity has befallen this country. President McKinley was shot on September 6 last at Buffalo and died in that city eight days later. The murderer was one of the most depraved criminals that ever walked the face of the earth. The criminal was promptly arrested, and after a fair trial was found guilty and duly executed. While our nation was so terribly shocked by the death of one of the most



JOHN HESSEL, President.

beloved men in this country, if not in the world, we were fortunate in having a Vice-President who is capable of taking hold of the reins of the Government, and who has shown himself, even in this short time, to be our President not only in name, but in action. I earnestly hope that the Allwise Ruler of the universe may spare him and his successors from the assassin's hand or an untimely death.

OUR ASSOCIATION

is in a healthy and prosperous condition. We held our own during the past year, although we lost some members by non-payment of dues and some who retired from business. Our secretary's report will show you exactly the number gained and lost. The growth and progress of our association is closely watched by other State organizations. It seems to me that we ought to have enrolled at least 90 per cent. of the retail Hardware dealers of the State. Those that are not yet members ought to be made acquainted with our aims and objects, and what they could gain by becoming members.

THE MATTER OF INSURANCE.

In the first place the insurance is quite an item in itself. We are told that we can save at least 35 per cent. on our premiums, which is well worth considering. Right here I wish to say that I believe the Hardware dealers are paying more in proportion to their losses than the dealers in any other line. The merchant who welcomes a fire is not selling Hardware. Our risks are

not so dangerous, our goods are less combustible, and yet we have to pay as much as any other line. Why is this? If we work more harmoniously together we can take this up with the insurance companies and try for better rates. I believe that they would hate to lose good customers all over the State just as much as you or I would.

Some may ask what good your organization does you. To this I would say, if it did nothing more than make me acquainted with 150 or 200 men from all over the State I would be amply repaid by that alone. But this is not all. We get together, ask questions, swap opinions, help each other solve knotty problems and "talk shop" in general. Of course if any one who pays \$2 fees expects the association to give him back \$5 he gets left.

SURPLUS FUND.

An important item that needs your attention is our surplus fund, which ought to be invested or some plan devised to take care of it. It is largely due to our worthy secretary that we are able to show you a very handsome surplus at this time. By his earnest efforts and able management in securing advertisers for our programmes he not only procured a handsome souvenir for us, but also enriched the treasury.

The Executive Committee had one meeting in Fond du Lac last September. We have a broad field before us and a great deal remains to be done.

THE PARCELS POST BILL.

I understand that there is a bill before Congress called the Parcels Post bill, under which the limit of the amount of matter which can be sent by mail is extended to 200 pounds, and provides that the first 60 pounds be carried for 20 cents and for every additional 20 pounds thereafter, up to 200 pounds, 5 cents additional. This seems to be clearly a catalogue house scheme and this association ought at once to ascertain the truth, and if found to be such should fight it with all its might.

I would recommend for your consideration joining the Northwestern Association as it was a few years ago, providing that we can get in on a reasonable basis or a fair proportionate payment. Our worthy vice-president and Brother Nash may have something of interest to report regarding the National Association.

Secretary Peck's Report.

In presenting my fifth annual report, I am glad to be able to say that I have no discouraging words to bring. The membership of your association is working along harmonious lines and during the year has nearly or quite held its own and, so far as I now recall, there have been no complaints that have not been satisfactorily adjusted. I have yet to come in contact with the first jobber or manufacturer who has not shown a disposition to treat with fairness every reasonable or just complaint.

CONDITION OF THE ASSOCIATION.

We have not accomplished all that any of us desired, but more than some of us expected, and to-day I would not belittle the influence of 300 retailers banded together loyally to accomplish any legitimate end. Our membership at this time is 273, all with dues paid to date and five of whom have paid in advance.

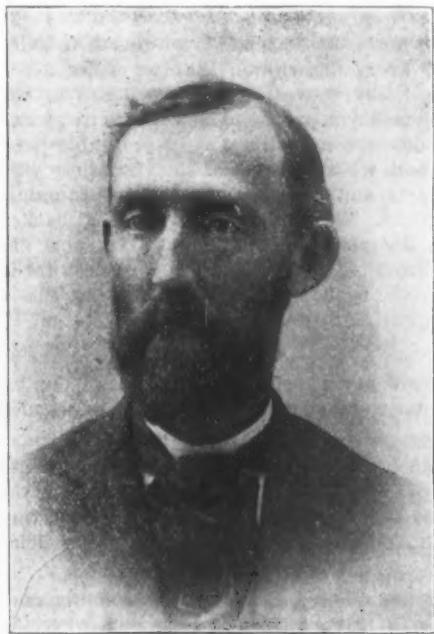
My work has differed but little from that of previous years. I have found enough to do most of the time to keep me out of mischief, and while at times it has been burdensome, it has had its favorable offsets, not the least of which is the cordial support that almost the entire membership have accorded to me.

In detail I would mention that on February 28 I sent out duns to 150 delinquents, and May 22, 100 of these still neglecting, I again reminded them of the fact, but up to October 8 82 of this 100 had such a rush of trade that they could not attend to it, when, by instruction of your Executive Committee, I wrote again with notice that I would make draft on the 23d of the month if I heard nothing to the contrary. Seventeen of the 82 remitted and I made 65 drafts, as stated, with the result that I found five of the number were out of business, 24 paid the drafts, 24 remitted but refused the drafts, subjecting the association to an expense of 7½ per cent. of their annual dues, 31 refused payment without excuse and

were dropped from membership, as it was thought that any member not taking a \$2 financial interest in the association was beyond the pale of our benefits and probably out of reach from doing us any good. This loss of 31 was partially made up by the reception of 22 new members, so that to-day we number about the same as a year ago.

\$1200 ON HAND.

I am able to report our finances in excellent shape, as there is about \$1200 on hand, with no debts outstanding. While there was at one time some talk of a banquet at this session, to be given by the association, it was voted down, for, as one ex-president said, it was better to have



C. A. PECK, Secretary.

a bank than a banquet. I would suggest that it would be a good idea for the present meeting to devise or suggest the best way in which at least a part of this balance may be used in building up the association.

Some will say at once, remit one year's dues, but to this I would enter an emphatic protest, for they are now the lowest of those of any association in the country, and I believe every good member will be more interested in paying his dues than in having them remitted.

As far as I know we have lost by death but one member this year—Charles Kartak of the Lisleburg Hardware Company, Oconomowoc, who died in October (the fourth I think), and I would suggest that our association take some action upon the same. The elements have been kind to us during the past year, as I believe but one of our number (the Marshfield Hardware Company) have suffered from fire.

Burglars have not been as considerate, for they called upon friend Seelig of Ripon, D. G. James of Richland Centre, Wilkie Hardware Company of Fond du Lac, and possibly some others, but from results I have an idea that in some cases they found the goods marked so low that they were ashamed and refrained from dipping in very heavily.

In conclusion, I would add that I am not indifferent to the high honor you have conferred upon me in allowing me to occupy this office from the formation of the association, six years ago, and again desire to return to the membership my thanks for their uniform kindness and co-operation, only adding that if I have said or done anything I ought not to have done, I am either glad or sorry, and it is not quite clear to me which. I trust my services have been so kindly received that they will merit some attention to the request that I kindly, but firmly, make that you now transfer my salary to some better man, who, I trust, may receive the same cordial support from you that you have always accorded me.

My account with your treasurer is as follows:

February 12, 1901, To cash from predecessor.....	\$675.43
February 10, received from secretary.....	279.00
February 1, 1902, received from secretary.....	123.72
Total.....	\$1,078.15

To this is to be added the net proceeds of the programme, after paying the secretary's salary.

Care, Management and Display of Retail Hardware.

BY H. C. SCOFIELD.

In the subject assigned to me, "Care, Management and Display of Retail Hardware," I will not presume to tell you how it should be done, but rather describe our methods, trusting that some of our ideas may be useful to you, as we expect to carry home some of yours. We consider the opportunity afforded at these meetings of exchanging ideas and comparing experiences, well worth all the time and expense attending them.

We will begin with the exterior front. In order to make the first impression a favorable one, the store front should present a neat appearance. We keep ours well painted with a dark greenish black coach color, the ornamental parts touched with gold leaf and the whole varnished with a good quality of spar varnish.

SHOW WINDOWS.

We endeavor at all times to keep our show windows attractively dressed, changing the display about once a week. In the arrangement we get valuable aid from the trade publications by cutting out the illustrations and descriptions of window displays. These we paste in a scrap album, using an old catalogue for this purpose, cutting out every other leaf to make room for the extra thickness of the cuts and clippings. We also paste in this book cuts and descriptions of any racks, display stands or devices that we think will ever be of use to us, in whole or in part. This book is often referred to for suggestions, from window displays to Fourth of July street parades.

We have had an electric plug and switch put in each window and add to the effects by the use of lights, &c. A red 16 candle-power incandescent light inside of a Coal Stove gives it the appearance of being in operation. You will find that you can make as attractive displays as your neighbors in other lines. We would advise a dis-



H. C. SCOFIELD.

tinct display of one class of goods in each window—that is, exclusive Sporting Goods in one, Tinware in another, &c. Push the lines that afford the most profit. You will notice they begin to appear oftener on your want book, if you keep one, and every dealer should.

SHOW CASES

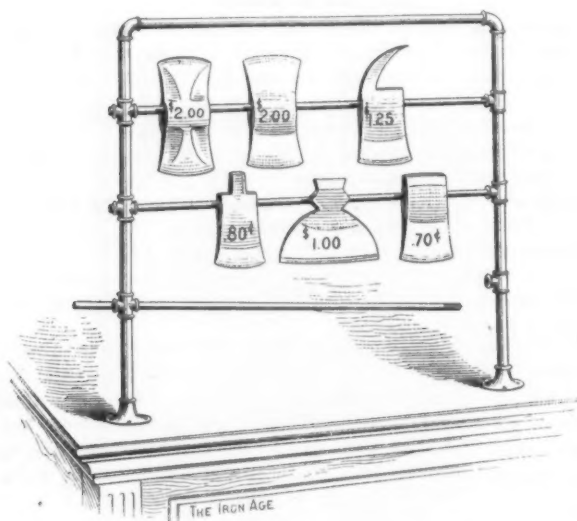
These afford the best means for inside display. We use as many as we can find room for, aiming to have them all of uniform size, shape and material or style, keeping them clean and the contents in order, and as far as possible a distinct class of goods in each, display-

ing Cutlery in one, small Tools in another, &c., using one for Brushes, laying them in loose without boxes, displaying Cutlery in the same way, marking each Knife or Shear and laying them in rows, or heaped up on a plush tray. We think sales in these lines are increased by this manner of displaying them.

We had a local cabinet maker make us two tall counter cases, using some plate glass that we had on hand for the fronts, ends and shelves. In one of these, 2 feet wide, 6 feet long, 4 feet high, we put in swinging mirror doors at the back, carpeted it with plush, and put a small electric light in the top. This case we use for Silver and Nickel Ware. In the other case we put a case of drawers in the back, projecting into the same about 10 inches, the back forming the back of the show case. This we covered with red felt, and on this tacked an exhibit of Twist Drills, Taps, Dies, Screw Plates, &c., showing the larger sets of Taps and Dies in the bottom, together with Breast Drills and similar goods, the drawers in the back holding the stock.

SHELVING.

Last spring we invested in an outfit of Warren shelving and counters. We do not mention this for the pur-



AXE RACK.

pose of advertising our friend Warren, but he is certainly right on fixtures. Ours is a combination of wall cases and shelf boxes, with glass fronts and felt covered sample boards, and the increased sale of the lines that were prominently shown has been very noticeable. This has been especially true of Guns, Locks and Builders' Hardware. This latter line we display on felt covered boards. The boards hang on pins in a wall case and in front of shelves. These shelves hold a supply of the goods shown on the board directly over them, or in front of them. We display one pattern of Lock, front and inside, on a board, showing on the same board the window trim of the same pattern. A customer can see at a glance the trim for an entire house. Different boards show different patterns, one board showing all our Cupboard Catches, another our line of Latches, another our line of fancy Butts, &c. We sorted out and sold as job lots all odds and ends of this class and only keep in stock what we show in samples. We have all our Lock sets put up one set in a box, they being easier to handle and making a more attractive appearance on the shelves. Our shelving for Tinware extends from the floor to the ceiling and is reached by traveling ladders. This shelving is 2 feet deep and affords ample room for display and reserve stock.

CASES, RACKS AND CABINETS.

We keep our Iron Rivets in a cabinet on our Bolt counter, Horse Nails, Calks, Nuts, Washers in this same counter and case. Our Malleable Irons, Wrought Irons, Steam Fittings, &c., are kept in pigeon holes. Our Wire Screen on a stand or rack by itself, our Wire Cloth measuring machine on a table with room underneath for the full rolls. Window Glass in a case with a cutting

board at the end. Hoes, Rakes and Forks on brackets with Handles in a rack underneath. Hay Knives and Handled Axes in a rack, and Axes in boxes on a short counter, with samples of each style or kind of Axe on a sample rack. This rack we make of Iron Pipe Standards, secured to the counter top with flanges, and a tee in the standard, through which we run smaller Pipe, at the proper distance, to allow the rows of Axes to be placed over each other. The rods being run through the eyes of the Axes, allows them to be examined without removing them. We mark the selling price on each Axe. Our Stoves we mount on individual platforms. These platforms are mounted on Martin casters and painted a bright vermillion, which forms an attractive contrast for the polished or nickel surfaces.

SECOND-HAND GOODS.

One room in our basement we devote to second-hand goods of every description that we take in on trades, &c., principally Stoves. These we polish up and make a few necessary repairs and arrange in rows as we would new goods. We find this a very profitable department. In this room we have a set of shelves where we keep all Stove Parts and Castings that will accumulate in all Stove stocks. We sort them in classes, backs, fronts, bottoms, dampers, &c., by themselves; also parts that we take from old Stoves that are worthless for anything but old iron, such as legs, bases, &c. In this way we use up many scraps at a good profit.

WOOD STOCK.

Wood stock we keep in a dark part of our basement, and are not troubled with powder post or wood borers.

EACH CLASS BY ITSELF.

We aim to keep each class of goods together in departments. If a call is had for an article in the Sporting Goods line it will be found in that department, and not in the Tinware, or mixed up with the Grindstones.

MANAGEMENT OF THE STORE.

In buying we are conservative, selecting one or two good houses in each line and staying with them. By bunching your business your patronage is more desirable to them, and you will be well treated. If at any time you differ in opinion, give them a chance to square themselves. Be courteous in your correspondence and do not make unreasonable claims or be continually fault finding. Treat their representative with as much consideration as you would wish to be shown yourself. You will find that it is best to have the good will of the traveling man. He will give you the best he has, and take good care of you. If you are given a special price, keep it to yourself, do not give it away or use it as a lever on some one else, thereby making all kinds of trouble.

PERSONAL ATTENTION TO BUSINESS.

Give your business your personal attention if you would succeed. It should be paramount to politics and lodges. Look carefully after details. Supplement this with a cordial manner, take an interest in your customers' affairs, ask after the welfare of their family, help them load up, bid them good-by when they start for home. This costs nothing and returns a dividend. Have a system about your business, your prices, your sales, your purchases, your contracts, your quotations, your collections, especially the first. Have your stock so priced that any one in your employ can find the price of any article. This creates a feeling of confidence in you, your customer is not so liable to inquire concerning the prices elsewhere, to satisfy himself that you are right. A system of pricing is invaluable at inventory time.

ASSORTMENT.

Carry a good assortment, less of a kind and more kinds, study the new goods that come out, add side lines, but before adopting them be sure that they are right; investigate their claims, do not ask your trade to take an article on your recommendation unless you are certain it is right.

After selecting the line and make, advertise it, push it for all you can. Convince your trade that it is the best, prove it to them. Do not be spasmodic in your efforts, keep everlastingly at it. Many of these lines take

but little room or are ordered as they are sold and not carried in stock at all.

VELVET.

We nearly paid our rent with our profits on Wind Mills the past season and did not keep one in stock. We more than paid our rent with our profits on Cream Separators. We more than paid our taxes with our profit on Road Machinery, that the firm's agents sold for us, with our help. The sale of these goods added very little to our expense during that time. Push the goods that bring in the best returns; the staples will sell themselves. There is more profit in a Camera, a Gun or a Bicycle than in a whole carload of Nails or Barb Wire.

NEWSPAPER ADVERTISING.

Advertise. Advertise judiciously, advertise often, engage a certain space in your local papers, on the local side, upper right-hand corner next to pure reading matter. Change your ads. each week. Make them short and to the point. Use cuts as much as possible and confine your ad. to one class or line of goods at a time. Don't be sensational; be candid and truthful.

CIRCULARS, ETC.

Supplement your newspaper efforts with circulars during the quiet times, and always inclose a pamphlet in your letters to your trade. Keep the catalogue house catalogues in your desk to know what they are telling your trade (for you will find that nearly every one of them has one of these books at home), most of these prices you can meet, with the freight added. Do not advertise them by complaining to your trade, but go after them; in most cases you will be given the preference.

EMPLOYEES.

Employ good help, treat them well, take pains to post them about your lines, give them the management and care of certain lines and hold them responsible for the success of their department. Encourage a friendly rivalry, notice and appreciate their efforts, see that goods are not misrepresented and that full measure and weight are given. This is necessary to your success.

TREATMENT OF COMPETITORS.

Your competitor. Do not think hard of him simply because he happens to be in the same line of business that you are. Do not imagine for one moment that you are entitled to all the trade. You cannot get it all, but get all you can, and get it as honorably as you can. Talk your own goods; do not advertise him or his by complaining of them. Your aims ought to be alike, to sell all the goods you can at a fair living profit, and not to "do each other." Do not cut prices below a living profit. Your competitor will certainly meet your cut and the chances are that he will "go you one better."

SUPPORT OF THE ASSOCIATION.

Finally, back up this association with more than your annual dues, use your influence to extend its membership, and if any of the houses that solicit your business are on the black list give them to understand that this fact is a serious obstacle to any business relations between you.

AUSTRALIAN NOTES.

FROM OUR SPECIAL CORRESPONDENT.

MELBOURNE, January 6, 1902.

RETAIL trade has been very good of late, due to the Christmas season. We are not yet quite settled down to the new order of things, and indeed the metals and machinery division of the tariff is not yet done with. But Parliament is in recess and we enjoy a brief respite. It is not anticipated that wholesale orders will be a noticeable feature in the Hardware life of the year upon which we are now entering. Stocking up in anticipation of the tariff during 1901 has had the effect of finding the Hardware trade, as a whole, with more capital on its shelves than it has ever had before, and there must of necessity be slackness in importing while present stocks are being worked off.

The heavier lines are decidedly quiet.

New Industries

are promised us under the fostering care of our tariff. The manufacture of Horseshoes will shortly be entered upon by a well-known Australian firm, and we hear of several industries mentioned on the Sydney side, where the advantages of water frontages to Sydney harbor and cheap coal offer special inducements to manufacturers. An English firm of Anti-Fouling Paints are reported to be about to establish works at Sydney, and a well-known American Paint and Varnish house are reported, on good authority, to be about to carry heavy stocks here, though not to manufacture.

HORSESHOE NAILS.—The duty on these goods, which a few years ago was 14 shillings a hundredweight, has been gradually reduced, and was recently fixed by the Federal Government at 5 shillings per hundredweight. John Pender & Co., Brunswick, Victoria, whose Nails are hot forged, have had complete run of the Victorian market in this line for many years. American Nails have had no chance in Victoria, though they have been sold in the other States. The present output of the factory is about 175,000 Nails per day.

Customs Decisions.

Recent decisions affecting the Hardware trade are as follows:

ICE CHESTS, 20 per cent., as furniture.

STEEL RAILWAY SLEEPERS, 15 per cent.

EMERY WHEELS, free when not in machines.

HAND SEWING MACHINES, free, except where they have more than the metal base.

SEWING MACHINES, head or working parts above plate, free, other parts of wood and metal, 20 per cent. as furniture. Covers, if of metal, 25 per cent.

Population.

From a return published by the Victorian Government statist, it appears that the population of the Australian commonwealth is 3,775,128, the population of the various States being as follows:

New South Wales.....	1,356,090
Victoria	1,201,178
Queensland	498,129
South Australia	363,157
West Australia.....	184,099
Tasmania	172,475
Total.....	3,775,128

New Zealand (not in the commonwealth) will probably muster about 750,000 more. The figures are not very impressive, considering the territory over which they are spread is all but equal to the United States of America in size.

Yet wages are higher here, and the spending power of the people consequently greater than in other countries, hence the more than usual value of the market. All our natural industries seem to call for large Hardware requirements for their development.

Files and Rasps.

The time honored argument as to the superiority of English or American Files and Rasps is as far off satisfactory conclusion as ever. Horse Rasps of Sheffield make are being energetically worked among the farmers by a Melbourne manufacturing firm, and are meeting with much success.

The Victorian Employers' Federation

has been formed to act as a central organization in the interests of employers generally. Other trade associations of employers, or individual employers, are alike eligible for membership. Its chief objects are the regulation of labor, protection against excessive State interference, and the selection and support of candidates for the Legislature, so that it is practically a political organization, the need for which has been undoubtedly created by the excessive demands of the Labor party.

S. I. Newcomer has bought the McKibben Hardware, Stove, Agricultural Implement and Sporting Goods business, at Lanark, Ill., and will continue it on a cash basis.

The Hawkins Hardware Company have succeeded Hanson & Son, Vermillion, S. D. They are installing Warren Shelving and in many ways improving the store.

Hardware Merchants' and Manufacturers' Association of Philadelphia.

A. S. Kille.
H. Vance Peters.
C. L. Schlatter.
Louis V. Wolf.
W. A. Barr.
Milton Jackson.
Jos. M. Rogers.

THE sixteenth annual dinner of the Philadelphia Hardware Merchants' and Manufacturers' Association was held in the banquet hall of the Hotel Bellevue on Thursday evening, January 30, at which there were present 115 members and invited guests. Previous to the dinner President-Elect Wm. C. Peters held an informal reception in the hotel parlors. The banquet room was tastefully and elaborately decorated with American flags and evergreens, the table decorations being roses, carnations and ferns, together with a plentiful supply of various Hardware articles furnished as souvenirs of the occasion by various firms, among whom were Henry Diston & Sons, Enterprise Mfg. Company, North Bros. Mfg. Company, G. & H. Barnett Company, McCaffrey File Company, Miller Lock Company, Thomas Devlin & Co., Germantown Tool Company, Star Lock Works and Sheble & Klemm. The menu card was of most attractive design, being inclosed together with a list of the hosts, invited guests and officers of the association, in satin wood finished covers, representing a barn door, which was fastened with a hasp and secret spring lock; a turkey was represented suspended from a nail in the door, indicative of the good things which were to be enjoyed. A small nickel plated hatchet adorned one side of the cover, while at the top in embossed letters was the inscription: "Sixteenth Annual Dinner of the Hardware Merchants' and Manufacturers' Association of Philadelphia, Thursday Evening, January 30, 1902. Hotel Bellevue."

At the speakers' table were seated the following gentlemen:

Fayette R. Plumb.
John R. Griffith.
Thos. Hobson.
Ellicott Fisher.
Jas. H. Ritter.
Samuel Diston.
John Sparhawk, Jr.
William C. Peters.
T. James Fernley.

Rev. J. R. Davies, D.D.
Chas. B. Adamson.
H. B. Lupton.
Chas. M. Biddle.
Thos. Devlin.
T. Henry Asbury.
Irby Bennett.
A. Eugene Bolles.

At the other tables were the following:

Merle Middleton.
Chas. E. Grange.
Fayette R. Plumb, Jr.
Jas. T. H. Miller.
S. F. Wilson.
W. K. Wilson.
Henry C. Ghiskey.
D. W. Wolf.
Daniel Crawford, Jr.
O. M. Milligan.
H. R. W. Rhan.
Fred. M. Devlin.
Walter E. Devlin.
J. B. Lequear.
A. A. Rogers.
Chas. A. Huff.
S. Spencer Scott.
Alfred C. Rex.
C. Stengel, Jr.
G. E. Saul.
W. H. Stubbs.
Wm. J. Devlin.
Mark A. Schoales.
Henry Drinkhouse.
Jas. T. Riley.
Elmer E. Brown, M.D.
H. H. Bronson.
Jas. S. Bonbright.
J. H. Conarroe.
J. D. Brainerd.
J. Howard Ervien.
Walter F. Klemm.
E. B. Mears, Jr.
J. B. Morgan.
W. H. Owen.
W. H. Wolf.
W. T. Morrison.
R. W. Mallon.
R. R. Conarroe.
Edw. J. Darby.
Edward Darby.
Chas. S. Harper.
J. Reynolds Naulty.
John W. Klemm.

N. F. Cressman.
H. E. Asbury.
Job T. Pugh.
M. D. Dwight, M.D.
D. S. Cann.
Geo. B. Beaver.
Geo. Koon.
E. S. Fogg.
D. H. Reddie.
Thos. Adamson Fernley.
Frank G. Drew.
Geo. W. Ferguson.
J. H. Van Newkirk.
Alfred W. Barnett.
Walter S. Cook.
J. R. Davis.
E. Bertram Pike.
B. A. C. Craig.
Chas. M. Ghiskey, Jr.
C. J. Pfeiffer.
Chas. Z. Tryon.
Paul A. Griffith.
Chas. M. Biddle, Jr.
John Allen.
A. O. Albrecht.
John Holden.
Merrick Haspel.
Henry W. Scattergood.
C. O. Krauss.
A. F. Horton.
Geo. F. Barnett.
Henry J. Gosling.
H. S. Hendrickson.
Tylee B. Hendrickson.
Edward Knight.
E. S. Jackson.
Harry C. Diston.
Crawford Miller.
J. D. Green.
Wm. A. Graham.
R. H. North.
J. L. B. Holme.
S. G. North.
C. W. Asbury.

Secretary-Treasurer T. Jas. Fernley, in the absence of the retiring president, Hugh McCaffrey, presided, and introduced the Rev. John R. Davies, pastor of the Bethlehem Presbyterian Church, who invoked Divine blessing. After the banquet had been served Mr. Fernley, in one of his characteristically witty speeches, expressed his pleasure at the representative attendance, particularly in the fact of the number of the younger element of the trade present.

Mr. Fernley read the honor roll of the past presidents of the association and concluded by introducing the next president of the association, W. C. Peters of James M. Vance & Co., who was received with long applause and singing of "For he is a jolly good fellow." Mr. Peters, after thanking Mr. Fernley, said:

President Peters' Address.

Fellow members of the Philadelphia Hardware Merchants' and Manufacturers' Association: To you I desire to express my appreciation of the honor you have done to me in electing me to the office of president.

The pleasure arises from my appreciation of you, fellow jobbers; from my esteem of you and the friendship we have for each other, much of which is due to the years of intercourse in our association, and from my high regard for you, manufacturers, whose business and names are so well and favorably known throughout our broad land and who have made a splendid reputation for Philadelphia made tools. I remember you in your early days—your humble beginnings—and have watched your growth to the magnificent developments of the present.

The United States limits have not been a limit to some of you, but, sweeping across the seas, you have entered foreign lands and challenged for merit, utility and adaptability the long established products of Europe. Many years before the present era of our extraordinary efforts in exports some of you were quietly (Philadelphia-like) pushing out and planting your business in Europe, also to South America and the Orient. To you, therefore, is due high honor as successful pioneers.

Therefore the honor of being your president is a reflected honor, belonging not so much to one whom you choose to fill the office as to the worth, the ability and the persevering enterprise of the membership.

We mutually regret the absence from our banquet to-night of him who for the past two years has been our president, Hugh McCaffrey. He is a manufacturer of Raps and Files, but in the two years no member has been rasped, and if at times he filed us it was for a better efficiency, and always done with such a dead smooth file that it only polished without hurt. He is kept from us to-night by sorrow for the loss of a son. I am sure he has our sincere sympathy.

Two chairs are vacant to-night. Two members who were with us a year ago will never again meet around our social board or be present at our meetings, for the resistless angel of death has conquered them. The first one taken was our young friend, Wm. D. Supplee, who in the vigor of an early manhood, full of splendid promise, was suddenly cut down. He was a man among men and we deeply regret his loss.

The other was Charles M. Ghiskey, our senior member. We honored and loved the man. My personal knowledge of him goes back to the year 1849 or 1850, when as a boy I first visited his store, for then he was doing a successful business. During more than 50 years our friendship was active and unbroken, and never in all the years did I ever hear of his doing an unworthy action. An honored merchant and Christian gentleman has left us, and no doubt has heard the Master say, "Well done."

Our association is unique, for it is not of merchants only or of manufacturers only, but comprises both mer-

chants and manufacturers. This is an unusual combine. Our mutual contact and the expression of ideas from our opposite standpoints has broadened our views, has made us more considerate of each other and wiser in our methods, and furnished a good example of "how good it is for opponents to meet together in unity."

Consolidation of Jobbing Interests.

There is one more topic to which I wish to call your attention—the mutual danger we have been passing through. I refer to the menace to our independence as jobbers—even to our profitable continuance—the project started a few months since to unite the principal jobbers of the country into one great jobbers' trust, by which we have been tempted by the flattering though not uniform promises that were offered us to give them an option on our business, which, if it had been successful with the majority, would likely have made it compulsory on the minority to either yield or be crushed. If successful it also would have resulted in a material injury to the profits of many of our manufacturers, who would have been placed under a strong pressure to yield to their arbitrary demands or to be ignored. Also by a natural reaction would result a tendency to set aside the jobbers and those manufacturers who had refused to be controlled, and so, discarded by the trust, would have had to maintain their business by going direct to the retailers. This menace and danger, we hope, is entirely past.

There are many topics we might speak of, for the situation, in the words of the great Lawyer Brewster, "bristles with nice points," but I realize that there are too many sharp points with which the speaker might in haste wound himself. It is better to forbear, especially as we have with us a number of speakers who will interest us pleasantly and profitably.

Mr. Peters then introduced the vice-president-elect, Thomas Devlin, who said in part that he was proud of his election of vice-president of the association, and proud of his membership in the same; one in which jobbers and manufacturers could meet in friendly intercourse, from which results unquestionably beneficial to both had been and could be obtained, and which were practically impossible before the formation of the association.

Letters regretting unavoidable absence of Samuel H. Ashbridge, Mayor of Philadelphia; R. R. Williams, Hardware editor of *The Iron Age*, and W. W. Supplee, were read by the secretary, after which the Rev. J. R. Davies, D.D., responded to the toast, "The Ministry of Merchandise." Mr. Davies said, among other things:

Address of Dr. Davies.

I am glad indeed to be with you this evening. I was told when at your banquet last year that I was the first minister to be present at your gatherings, and would say that from the appearance of those gathered here to-night the religious improvement of this association is to me encouraging.

He said, speaking of the ministry of merchandise, that the question might arise as to what connection he had with the Hardware trade, and proceeded to say that as a mere lad he had gone to work in a foundry, and had worked there for eight years. It was in this foundry at the noon hours that he began the study of Latin and his preparation for the ministry. Therefore he felt that the bond of connection was close indeed. The reverend gentleman then alluded to new inventions as being the greatest possible stimulus to other inventions, all of which tended to easier conditions of life. Not so many years ago it required all a man's time to earn a mere living, and such a thing as travel and other means of enjoyment and recreation were entirely beyond the reach of the masses. The railway, the steamship and the telegraph had brought the world closer together. The sewing machine, the electric car and numerous other inventions have made the conditions of life wonderfully less burdensome, and as yet we are probably only on the threshold of advancements which will inhere to the benefit of the entire race. Moreover, the Christian mis-

sionary is the pioneer of trade. Association with civilization promotes a desire to participate in its advantages, and in this way the various articles which become necessary under the changed conditions are called for, new markets are found and trade expands accordingly. The address was in every respect worthy of the reverend doctor's reputation; strong, forcible, full of inspiration and encouragement, and was warmly applauded.

John Sparhawk, Jr., responded in a masterly speech to the toast, "Balancing the Books."

Fayette R. Plumb, president of the American Hardware Manufacturers' Association, addressed the gathering on the subject of "The Advantages of Associated Effort." Mr. Plumb said:

Mr. Plumb's Address.

When I received the invitation of your committee to address you to-night I was undecided whether to accept or not. It was not that I did not appreciate the compliment tendered, but because I have appeared before you so often in the past I felt you would be much better entertained by others who had not been heard; especially the new members who have recently so ably filled the positions of trust assigned them. Recognizing, however, that the new position conferred upon me by the manufacturers of the country entails new responsibilities, and that for this reason what I might say would be of some interest, I cheerfully accepted. I am very glad I have done so, since it is always a pleasure to contribute what little I can toward the success of our association.

THE BENEFIT OF UNION.

The old saying that "In union there is strength," has been fully demonstrated by this association; the results have been most marked; the Boston Hardware Association was the first to follow in our footsteps; then came the New York State Association; the Southern Hardware Jobbers' Association; the National Hardware Association; the local State associations, and last, the American Hardware Manufacturers' Association. All of these that have been in existence for any length of time have been of great service to those who are members. This applies particularly to the jobbers and retailers, especially so because the parent organization, composed of those who are present here this evening, is the only one that includes in its membership merchants and manufacturers.

The Manufacturers' National Association is yet in its infancy; I hope and believe, however, that its record in years to come will compare favorably with those already established.

MANUFACTURERS' INADEQUATE PROFITS.

It seems a great pity that manufacturers who are as intelligent and progressive as those engaged in producing the beautiful wares that adorn the magnificent buildings which are daily going up around us on every side, and who furnish the tools that are used by the best mechanics in our midst, should not receive a satisfactory return for their labor.

I boldly and positively assert that with a few exceptions such is the case. While I do not wish to convey the impression that the manufacturers are making no profit, I do claim that it is infinitesimal when we consider present conditions.

What are the causes that prevent a proper return for the capital and intellect engaged in this industry?

First. The distrust engendered by excessive competition.

Secondly. Want of concerted action among the manufacturers.

Look the country over from Maine to California and from the Great Lakes to Texas, and what are the conditions that confront us? This is a question easily answered. Unexampled prosperity in every hamlet, village and city on the entire continent; a demand unprecedented in our history; a development beyond the dreams of the most sanguine; a condition that would warrant the independent action of every manufacturer, and yet they falter; why? Because they are afraid of each other, notwithstanding the fact that their business judgment warrants them in the belief that they should have better returns for their products.

We do not have to go far to learn a remedy for these evils; our own State bears witness to the correctness of this statement. No one will deny, I think, that the manufacturers who produce the raw material consumed in our factories are receiving liberal profits for their product; this has been brought about by concerted action. Long before the days of consolidation they conferred monthly with each other, and practically fixed the prices for their season's output. These conferences were often of a secret character. During these conferences the business conditions were carefully and intelligently discussed, and prices were regulated according to the demand.

What is the result? Profits oftentimes greater per ton than are realized by the manufacturer who fashions it into the finished article.

The improvements in machinery for our factories have been fully as great as the improvements in the rolling mills and furnaces, and if we had followed their methods of marketing our product the results, while perhaps not as great, would have been much more satisfactory.

THE NEEDED REFORMS.

We hope and believe that the reforms which the Executive Committee of the American Hardware Manufacturers' Association may recommend and the membership suggest will tend to correct these conditions to a great extent.

In conclusion, let me add that while the manufacturers recognize their right to unite in an effort to improve present conditions, they also recognize the necessity of working in harmony with those to whom they must look to distribute their wares, and with that end in view they have selected the same place and date for their first annual meeting as selected by the National Hardware Association. They will be prepared, at that meeting, to accept any suggestions made; and will also earnestly endeavor to correct any differences presented by their friends and customers.

I therefore predict that any success that may attend our efforts will also strengthen their organization.

Short addresses were also made by Irby Bennett, Merle Middleton and A. Eugene Bolles, after which, with the singing of "Auld Lang Syne," one of the most brilliant entertainments of the association came to a close.

During the course of the banquet vocal selections were rendered by Anna Elizabeth Kelley, contralto (Ella C. Fitzpatrick, accompanist); Eugene M. Tyrell, tenor; Thomas F. Hogan and Jas. H. McCoal, baritones.

The committee in charge of the banquet consisted of Harry C. Disston, chairman; Walter E. Devlin, C. W. Asbury, Edw. S. Jackson and J. H. Van Newkirk.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

F. J. Knesek, Moulton, Texas, dealer in Hardware, Tinware, Crockery, House Furnishing Goods, &c., requests that copies of catalogues, price-lists, &c., be sent to him in regard to the above lines. Mr. Knesek was formerly in business in Schulenburg, but has lately moved to Moulton, where he had just completed a new building when it was destroyed by fire. Mr. Knesek had not, however, moved in his stock, which was thus saved from destruction. He has already contracted for a new building to be made ready with all possible haste.

Shelton-Payne Arms Company, dealers in Firearms, Ammunition and Saddlery, El Paso, Texas, have just added a stock of general Hardware, and will value copies of catalogues and discount sheets from manufacturers in this line.

Easterling-Patterson Company, Barnwell, S. C., have just entered the general Hardware and Agricultural Im-

plement business, and will value copies of catalogues, price-lists, &c., from manufacturers.

WHITE MOUNTAIN FREEZER COMPANY'S NEW CATALOGUE.

THE WHITE MOUNTAIN FREEZER COMPANY, Nashua, N. H., have just issued a finely printed descriptive catalogue, illustrating the various forms of the White Mountain Freezer, together with illustrations and reference matter of the various parts for repairs. In it are shown Hand Freezers, with both crank and fly wheel; Freezers for hotel and confectioners' use, Combination Gear Frame Freezers, Platform and Power Freezers and the Junior or Toy Freezer. The latter will make a pint of perfect cream to amuse the little folks or supply the sick room. In the back are shown Freezer and Packing Tubs and Cans and the Improved Arctic Freezer, the latter a single motion machine more moderate in price. On the covers, front and back, are White Mountain views. The catalogue will be sent to any interested dealer on application.

CORPORATION OF VOM CLEFF & CO.

THE firm of Vom Cleff & Co., 105 Duane street, New York, importers of Hardware and Mechanics' Tools, were dissolved January 20, 1902. The business will be continued by a company of the same name, Vom Cleff & Co., at the same address, under the same management, recently incorporated under the laws of New York. The entire business of the firm has been turned over to the corporation, the new company assuming all the contracts and obligations and receiving all the assets of the firm. All accounts owing to the firm of Vom Cleff & Co. are payable to the corporation of Vom Cleff & Co., and all debts of the former will be paid by the latter. The officers of the new company are Robert Vom Cleff, president; Arthur H. Kennedy, treasurer, and Walter Vom Cleff, secretary.

ROBERTS HARDWARE COMPANY.

ROBERTS HARDWARE COMPANY, Utica, N. Y., have bought the building, 60 Genesee street, adjoining their present establishment, and will remodel it to suit the purposes of their large and growing business. The property has a frontage of 30 feet on Genesee street and is 231 feet deep, running through to Burchard lane. The front portion, 30 x 120 feet, is covered by a building four stories high and very high between floors. While the company have all their plans well matured, the work of remodeling will not begin until after May 1, when the property will be vacated. No expense will be spared in making everything as convenient, serviceable and attractive as possible. The company will extend their business in Shelf and Heavy Hardware and will add several new departments.

PRICE-LISTS, CIRCULARS, &c.

THE EAGLE LOCK COMPANY, Terryville, Conn., and 98 Chambers street, New York, have issued a large number of extra pages for insertion in their book catalogue, known as Volume 18. Among the goods illustrated and described is a Sub-Treasury Lock, Pin Tumbler, Mortise Cupboard and Lever Drawer Locks, Steel Padlocks, Surface and Brass Suit Case Locks, Escutcheons, Strikers in great number, Brass and Bronze Label Holders, Brass Key Checks and Bolts for sample and suit cases and commode doors. Accompanying the pages is a supplementary index of a large number of the various goods made by the company.

THE W. J. CLARK COMPANY, Salem, Ohio: Catalogue No. 4, 40 pages, descriptive of their Quick as Wink Hose Coupling, which can be adapted to a great variety of uses. It is stated that the small sizes of these Couplers are extensively sold to users of compressed air for use on hose connected with pneumatic tools and machines. The catalogue is copiously illustrated and gives numerous testimonials from fire department officials, large manufacturing plants, &c.

TRADE IN CALIFORNIA.

WE are in receipt of the following advices from W. H. Cole of Tower & Lyon, New York, who is traveling on the Pacific Coast, which relate especially to business in Los Angeles and San Francisco:

I find the Los Angeles trade busy and full of anticipation for the present year. The Hoffman Hardware Company are pushing to the front and fast being recognized as one of the first jobbing houses of Southern California. They have recently erected a large brick addition, which is found inadequate, and another is contemplated, possibly during the present year. The Harper-Reynolds Company maintain their position and have one of the finest Hardware establishments of the city. John Wigmore & Sons Company are erecting a large and handsome three-story and basement building in South Los Angeles street, between Second and Third streets, and will occupy it about February 15. The whole building will be devoted to Heavy Hardware, Machinery, Tools and Machinists' Supplies. One side of the first floor will be occupied by offices and drafting room and the opposite side by showrooms and iron and steel racks. There will be a 12-foot drive through the entire length of the building. There will be overhead trolleys and derricks to handle heavy Machinery, also a 3-ton electric elevator, 6 x 12 bed, running the entire height of building. The upper floor will be used for stock. This house are preparing to do the Machinery and Machinists' Tool business for Southern California.

I find in San Francisco a decidedly optimistic feeling. I am told that all mechanics are busy at good pay and that because of the scarcity of buildings for residence rents have advanced 33 per cent. The outlook for the year is good. The wholesale houses are well stocked, having bought liberally during the past season, stimulated by the fear of advance in price and that material would be scarce with the manufacturer.

TRADE ITEMS.

READING HARDWARE COMPANY, Reading, Pa., announce that they are now sole owners of the Ogden Automatically Regulated Liquid Door Check and Spring, having just purchased the entire plant of the Ogden Mfg. Company, Newark, N. J., together with patent rights, &c., relating to the Ogden Check. They are intending to remove this plant to their factories at Reading, where their enlarged facilities will insure a continuance of the same care and thoroughness which have characterized these goods in the past.

INDIANAPOLIS BRUSH & BROOM MFG. COMPANY, 26-30 Brush street, Indianapolis, Ind., have been incorporated with capital of \$30,000, with Geo. Lemaux, Jr., president and treasurer; Harry Ward, vice-president, and Melvin B. Stratton, secretary. The company will immediately double their present capacity for the production of Brushes and Brooms.

J. I. HOLCOMB has purchased the entire business formerly conducted in the name of Holcomb & Hoke Mfg. Company, manufacturers of the "Nucifera" Brushes, at Sullivan, Ind., and will continue same as the J. I. Holcomb Mfg. Company, with Eastern office as heretofore at 80 Greenwich street, New York City.

H. P. TOWNLEY, Terre Haute, Ind., is publishing a pamphlet, entitled "Fifty Bicycle Ads," in which that number of display advertisements for Bicycles are given. These are said to be reproductions of ads used in Mr. Townley's business for the past five or six years, and which have brought him good returns. Mr. Townley remarks that the ads are intended to catch the eye, to rivet the thought and to reach the pocketbook, which he believes they will do efficiently. The price of the pamphlet is 50 cents.

THE COLUMBIA MFG. COMPANY, Autigo, Wis., have been organized for the purpose of manufacturing Screen Doors, Window Screens and Wooden Ware, with a capital stock of \$50,000. The following are the officers: G. W. Jones, president; O. P. Schlafer, vice-president; W. E. Elliott, treasurer; Guy S. Moses, secretary, and D. S. Stewart, manager. The company have come

into possession of a fully equipped plant at Autigo, and the rearrangement of the machinery is now in progress. The plant will immediately proceed to the manufacture of Screen Doors, so as to be ready to make shipments by March 1.

JOHN D. BETHEL, for many years well known in the Canvas and Leather Goods business, has accepted a position with the Marlin Fire Arms Company. Mr. Bethel, who for the present will make his headquarters in New Haven at the Marlin factory, will be glad to see there any of his friends in the trade, in case they are visiting in the East. Later on Mr. Bethel expects to look after the interests of Marlin Repeating Rifles and Shot Guns in Southern territory, where no doubt his old acquaintances will be very glad to welcome him again.

A PATENT was recently granted to P. A. Myers of the firm of F. E. Myers & Bro., Ashland, Ohio, for an improvement in Horizontal Force Pumps, which is said to simplify the construction in a great degree and covers broadly the feature of grouping the suction and discharge valves in such a manner as to render them readily accessible. The patent covers the line of Century and Bulldozer Pumps manufactured by F. E. Myers & Bro.

THE firm of A. L. Silberstein, formerly at 450 Broadway, New York, are now located in more commodious quarters at 459-461 Broadway, where they have fitted up fine business and private offices, with an attractive sample room adjoining. They have the entire floor, the remainder of which is used for carrying a large stock of Cutlery branded Griffon, including Razors, both safety and regular, Automatic Stropping Machines, Pocket Knives, Shears, Scissors, Manicure Goods and associated lines.

J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., and 318 Broadway, New York, have just had lithographed a series of business envelopes, six in number, printed in color, which are artistically gotten up and will be used in their business correspondence. Various scenes are depicted in which their Firearms take part, one of the envelopes showing both of their plants for the production of Firearms and Mechanical Tools and Automobiles and Cycles. One of the reasons for getting out such a group of envelopes is the custom of young people who make collections of artistic envelopes, and the company believe it to be a good method of advertising their business.

CALENDARS, &c.

J. D. WARREN MFG. COMPANY, Chicago: Calendar for 1902, calling attention to their Hardware Store Equipment and giving a view of what is referred to as "the finest Hardware store in the world."

KED JACKET MFG. COMPANY, manufacturers of Pumps, Cylinders, &c., Davenport, Iowa: A very elegant calendar, consisting of a number of leaves tied with ribbon and reproducing in colors the seasonable flowers. On account of the heavy expense in getting up this calendar their supply is limited, but they have arranged with the lithographers for a limited number of duplicates, which can be had at 50 cents each.

ENTERPRISE WIND MILL COMPANY, Sandwich, Ill.: Pictorial hanger, calling attention to their Enterprise and Sandwich Perkins Wind Mills.

THE SPRINGFIELD MACHINE SCREW COMPANY, Springfield, Mass., as a 1902 souvenir, are sending out a very attractive scarf pin made in the style of their adjustable Hack Saw Frame. In a variety of finishes, the backs in gold or silver with oxidized blades and enameled handles. The company will be very glad to furnish these pins to old friends or to new who are interested in Hack Saw Frames or in any of their various products.

ST. JOSEPH PUMP & MFG. COMPANY, St. Joseph, Mo., makers of the Perfection Water Elevator and Purifying Pump, Steel and Wood Chain, Pump Curbs and Tubing, have issued a useful and attractive pocket memorandum book, with cover of celluloid, handsomely printed in colors. They will be pleased to send a copy to any in the trade applying for it.

MISCELLANEOUS NOTES.

Covert's Saddlery Works.

Covert's Saddlery Works of Farmer, N. Y., are now using a new metal called carbon steel in the construction of their snaps and various other goods of their manufacture. It is claimed that this metal is more desirable than malleable iron on account of being less liable to contain flaws, and more pliable, therefore less liable to check when necessary to bend it.

Cattaraugus Cutlery Company.

The Cattaraugus Cutlery Company, Little Valley, N. Y., are putting on the market a line of flat table ware, made from solid Yukon silver, 98-100 fine. This is a new metal alloy and of such brilliancy that the company believe it will largely take the place of plated and even sterling ware. It is much harder than sterling, and consequently there is more wear in it, and it is also much cheaper in price. They are manufacturing lines of tea, dessert and table spoons now in tipped, beaded and Genoa patterns. They are also prepared to make special patterns for the trade who will order in sufficient quantity.

Cabot's Insulating and Deafening Quilt.

Samuel Cabot, 70 Kilby street, Boston, Mass., is the manufacturer of Cabot's insulating and deafening quilt for use in buildings. It consists of a filling of cured eel grass, which will neither burn nor decay. The long, flat fibers cross each other at every angle and form a soft, resilient cushion of innumerable minute dead air spaces, the fiber being held in position by two sheets of paper closely stitched or quilted. The quilt is designed particularly for the insulation of heat in connection with dwellings, cold storage pipes and ducts, poultry houses, under tin, &c., and the absorption and dissipation of sound waves as a deafening agent especially for school houses, hotels, hospitals, society lodges, gymnasiums, residences, &c.

Doorenbos Gas Arc Lamp.

The Sanitary Specialty Mfg. Company, 26 Milwaukee avenue, Chicago, are sole sales agents for the Doorenbos gas arc lamp, on which a patent was recently granted and which has therefore just been placed on the market. This is not a vapor lamp, but one adapted for the use of ordinary city gas, and is constructed on a principle which enables a much more brilliant light to be secured than by the ordinary methods. It competes with electric arc lights and is less expensive. It is made with one powerful central Bunsen burner, supplying a number of different mantles. This is stated to effect a saving of about one-third the gas required by a lamp having an individual Bunsen burner underneath each mantle. The lamp is made with an automatic extinguishable pilot light. It is instantly lighted by pulling a chain and is extinguished in the same manner. This avoids the jarring of the mantles or the breaking of the chimneys whenever it is lighted. A guide prevents the mantles from being broken in removing or replacing the glass globe which incloses them. The exposed metal parts are highly finished and nickel plated, making this a very attractive lamp. It is especially adapted for lighting large rooms and stores.

Universal Vise.

Emmert Mfg. Company, Waynesboro, Pa., manufacturers of the Universal pattern makers' and wood workers' vise, have added an intermediate size to the Nos. 1 and 3 formerly made, and are now manufacturing it and prepared to supply the trade.

The Gem Shop Grinder No. 3.

A new emery grinder has just been brought out by the Chicago Wheel & Mfg. Company, 39 to 45 West Randolph street, Chicago, Ill., as herewith illustrated. It is designed for use in shops in which power is not avail-

able, and has been so constructed as to enable as much work to be done by hand as would ordinarily require considerable power. The manufacturers claim that with it as much work can be done in 15 minutes as an ordinary grindstone would do in an hour. The wheel used in this machine is of solid emery and is 5 inches in diameter by $1\frac{1}{2}$ inches thick. It is cupped on one side to afford a means of accurately grinding straight edges or surfaces, ordinary grinding being done on the face of the wheel. It is provided with a rest, which affords a sup-



The Gem Shop Grinder No. 3.

port for the tool or other work, enabling the operator to grind accurately. The shaft on which the stone is mounted runs in a babbitted box, which is made in two parts, so that it may be rebabbitted when worn. The collars holding the stone in place are accurately machined to insure the stone running true. It is geared to a ratio of 30 revolutions of the stone to one of the crank, which enables a very high speed to be reached, the average revolutions per minute being easily 2800. The diameter of the circle described by the handle is 14 inches. The size of the large gears is 10 inches by $\frac{3}{4}$ inch, and of the small gears 2 inches by $\frac{3}{4}$ inch. The dimensions of the machine are 15 x 17 x 12 inches, and its weight is 30 pounds.

Steel Shop Kegs.

The Cleveland Wire Spring Company, Cleveland, Ohio, are offering steel shop kegs, shown in the accom-

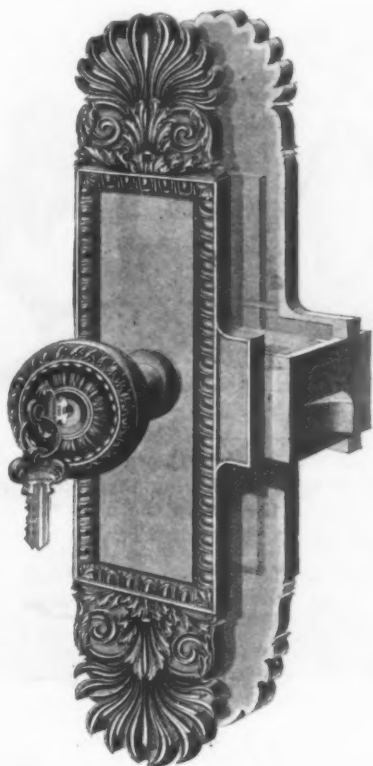


Steel Shop Kegs.

panying cuts. They are made with a triple reinforcing band around the top and bottom of the keg, and with either solid or perforated bottoms. When desired the kegs are made with three bands, as shown in the cut, the three bands and the body being made from one piece of steel.

Special Greek Design Corbin Lock Set.

P. & F. Corbin, New Britain, Conn., and 11-15 Murray street, New York, have furnished the new Frick office building in Pittsburgh, Pa., throughout with the Corbin lock set, here illustrated, of special design from architects' drawings. It is of a heavy Greek design, boldly modeled and in keeping with the massive character of the building in which it is used, which was de-

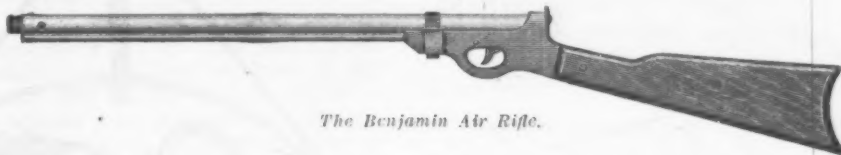


Special Greek Design Corbin Unit Lock Set.

signed by D. H. Burnham & Co., Chicago, and is one of the largest and finest office buildings in the world, occupying an entire city square. Some of the features of this building are 10 passenger elevators for the 19 stories, granite walls, rooms and corridors finished in statuary marble, doors and grilles in statuary bronze, Corbin unit lock sets and door checks on all doors, cabinet finish mahogany wood work, plate glass wherever glass is used and steel safes with specially designed interiors provided free. Some of the other accessories are a fine restaurant, café, roof garden and barber shop, the heating, lighting, plumbing and toilet equipment being in keeping with the other appointments.

The Benjamin Air Rifle.

The Benjamin Air Rifle Company, 212 N. Main street, St. Louis, who have acquired all the patents of the late St. Louis Air Rifle Company, are offering the air



The Benjamin Air Rifle.

rifle herewith illustrated. This new model is referred to by the manufacturers as greatly improved in construction and finish. It is a take down gun, and may be uncoupled by removing one thumb screw. It is not operated by a spring, but is charged by the aid of an air pump. In the old type of rifle rubber was used in some of the parts, but this has been supplanted by the use of metal throughout. The rifle is alluded to as being substantially and simply made and as not liable to get out of order. In finish it is full nickel plated.

Diamond Garden Cultivators.

The cuts here shown represent garden cultivators put on the market by the Whitman & Barnes Mfg. Company, Akron, Ohio. With the single wheel cultivator, Fig. 1, the manufacturers are prepared to furnish five reversible points, with hoeing attachments or weed cutters, and right and left hand plows. A rake attachment can be furnished when desired. The cultivator can, with the aid of the different attachments, be used for hilling, furrowing or covering. The hoeing attachments or weed cutters can be arranged to hoe in or out and to or from the plants, and can be set at any angle the operator may desire. In using the tool as a cultivator, one or more teeth may be used, as the different work may require. The wheel adjustment can be set to run deep or shallow, and the handles are also adjustable either up or down, to



Fig. 1.—The Diamond Single Garden Cultivator.

suit the operator. The double wheel cultivator, Fig. 2, has the advantage over the single wheel in being able to work both sides of a row at once. A patented opening and closing device permits the operator to set the machine in an instant, it is remarked, to any desired width. The controlling lever is placed between the handles near the top, by moving which to the right or left the tool is at once set just where wanted. It is shown that this cultivator can also be used the same as the single wheel cultivator for working between the rows where the plants are too tall to be straddled, and therefore combines the advantages of both the single and double wheel tool. It is made with six reversible points, hoeing

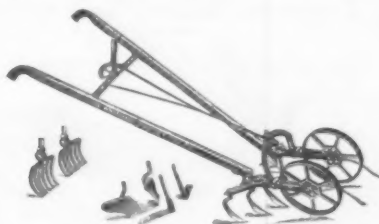


Fig. 2.—The Diamond Double Garden Cultivator.

attachments or weed cutters, right and left hand plows, and leaf guards or vine lifters. A rake attachment can be furnished when desired. In working both sides of a row the guards are on the inside of the wheels, but can be changed to the outside when working between rows. The handles can be adjusted by loosening one bolt. With the proper attachments, it is pointed out, the cultivator can be used for hilling, furrowing or covering. The

cultivators are referred to as being made of first-class material and in a workmanlike manner.

Bamer, McDowell & Co. is the style of a new firm who are just about opening a store at 38 Central avenue, Albany, N. Y. Mr. Bamer, the senior member, was for nearly 22 years employed by M. Croissant of Albany. The new firm will handle Builders' Hardware, Mechanics' Tools, Building Paper, &c.

The Iver Johnson Truss Frame Bicycle.

The accompanying cut represents a bicycle, a departure from the long accepted diamond frame, put on the market by the Iver Johnson Arms & Cycle Works, Fitchburg, Mass. The curved or arched tube is to add rigidity to the frame of the bicycle, thereby diminishing the possibility of buckling. It is also to strengthen

file handle, which the operator has in his hand, is sufficient to clamp or unclamp the saw, and to hold it tight without chattering. The planed up jaws and inclines give it a perfect bearing the whole length of the clamp, which, it is explained, cannot be accomplished with rough jaws and eccentric clamps. The arrangement for fastening is by means of two nails, equivalent to 8 penny, which are shouldered and put into the clamp,



The Iver Johnson Truss Frame Bicycle.

the hanger construction, which the manufacturers consider desirable, as the more rigid this point can be made the greater the speed possibilities of the bicycle are. The truss, it is explained, also permits the building of a very light machine for road use without incurring the risk of structural weakness. With the readoption of 1-inch tubing, which, the manufacturers state, promises to become quite universal in the near future, and of which this model is made, any point which is conducive to strength and rigidity, particularly on light models, it is pointed out, is not to be lost sight of.

The Diamond Saw Clamp.

The Diamond Clamp & Flask Company, Richmond, Ind., are putting on the market the saw clamp here shown. It is especially designed for house carpenters,



Fig. 1.—Diamond Saw Clamp.

being a tool which they can carry with them either in a tool box or in a coat pocket. There is an absence of screws, cams, levers, eccentrics or loose folding joints in the construction of the clamp, but it is made heavy

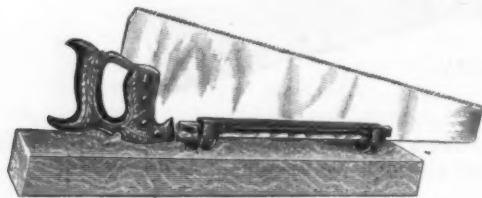


Fig. 2.—To Joint a Saw.

enough, it is explained, to stand rough usage. The arches are large enough to receive the saw handle. The jaws work on an inclined plane, and are planed straight. It is shown that striking the jaw a light tap with the

heads on the top, so that they cannot loose out. The clamp is held solid by driving them down against the head. To remove the clamp the nails are drawn with a claw hammer, as shown in Fig. 1, which also shows



Fig. 3.—For Band Saw.

the position of the saw for sharpening. The clamp may thus be fastened to a fence, pile of joist or to finished work without injuring it, with the exception of two nail holes. The clamp can be used to joint a saw, as in Fig. 2, also for band saws, as shown in Fig. 3. A metal file handle accompanies each clamp.

Holmes' Patent Improved Adjustable Pole.

The cut herewith shown is of an adjustable pole, offered to the trade by the Racine Pole & Spring Company, Racine, Wis. To adjust, the bolt head at the heel



Holmes' Patent Improved Adjustable Pole.

or lower end of the pole is turned to the right or left, until it fits the shackle. The pole is adjustable from 41 to 45 inches.

Striking Bags With Platform.

Treinis Bros., 88 Chambers street, New York, have recently put on the market two unique striking bags for the use of children and youths, as here illustrated. Fig. 1 shows the Children's Delight, No. 1. It has a cast met-



Fig. 1.—Children's Delight Punching Bag No. 1.

al bronzed wall bracket, to which is screwed a circular wood striking platform 13 inches in diameter and $\frac{5}{8}$ inch thick. Suspended from the center by a leather thong is an elongated or pear shaped ball $4\frac{1}{2}$ inches in diameter and $5\frac{1}{2}$ inches high, and which has a drop below the platform of 8 inches. The bag is made in the same manner as their high grade professional bags, with



Fig. 2.—Youths' Delight Punching Bag No. 2.

a rubber bladder to be inflated inside. The platform extends 15 inches outward from the wall to which in use the bracket is screwed. The Youths' Delight, Fig. 2, is similar in style, and has the same size bracket and platform, the bracket gold bronzed and the platform a cherry color. This platform, however, has an extra swivel, which permits of using a larger bag from which can be obtained a greater amount of exercise with more life to the bag. With this outfit the bag is $5\frac{1}{2} \times 6\frac{1}{2}$ inches, and drops 11 inches below the platform. Both bags can be furnished in several different colored leathers. The concern manufacture high grade sporting goods of the character of in-fielders' gloves, basket balls, footballs and platforms, boxing gloves, striking bags, striking bag gloves and catching mitts for professional use.

The Royal Vegetable Masher.

The accompanying illustration represents a vegetable masher offered to the trade by William G. Browne, Kingston, N. Y., and shows the bottom of the masher blade. This is formed from a single piece of sheet metal, perforated and so bent as to leave downward projecting cutting edges which hold the vegetables in place while being cut, and at the same time force them through the narrow openings. The masher has all metal parts tinned, and is provided with an enameled handle.

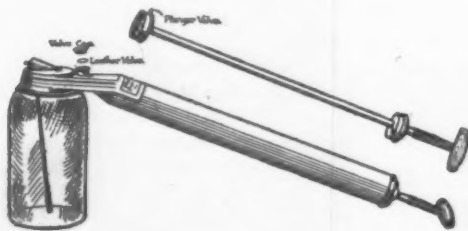


The Royal Vegetable Masher.

It is referred to as one which can be sold cheaply, as strong and easily cleaned, and as leaving the potato light, fluffy and free from lumps.

Ripley's Compressed Air Glass Jar Hand Sprayer.

The cut shown herewith represents a glass jar hand sprayer, improved for 1902, and offered to the trade by the Ripley Hardware Company, Grafton, Ill. The operation of the sprayer is described as follows: The air is forced into the reservoir by pumping, in the same way as with any sprayer. The reservoir has a brass discharge tube extending to the bottom and an air tube at the top, which allows the air to blow the solution out in the form of a continuous fog mist on all parts of the



Ripley's Compressed Air Glass Jar Hand Sprayer.

foliage. It is stated that it will spray in any position, including overhead. One filling of a 1 quart jar, it is explained, will spray 500 hills of potatoes, thus saving half of the usual time and labor. A 1 or 2 quart Mason glass jar will fit the sprayer. It is pointed out that nothing but the best material is used in the construction of the sprayer, and that leather washers are used on the jar, which are the best for use when spraying oily solutions.

Single Shot and Repeater Air Rifles.

The accompanying cuts represent a line of air rifles for 1902 offered by the Daisy Mfg. Company, Plymouth, Mich. The Daisy Repeater, No. 1, shown in Fig. 1, is referred to as presenting a very gun-like appearance, and as being a strong and accurate shooter. The repeating attachment, which is described as being simple yet accurate in action, is so arranged that both magazine and shooting barrel can be easily removed should an im-

first. It is pointed out that there are no levers or buttons to press, but that breaking the gun down makes it ready to shoot.

Famous Fishing Tackle Assortment.

Clark, Horrocks & Co., 54 Genesee street, Utica, N. Y., are offering the Famous fishing tackle assortment of their manufacture, as illustrated. They describe it as made up of the best selling 1-cent to 10-cent articles in



Fig. 1.—Daisy Repeater Air Rifle No. 1.

perfect shot become lodged in either. This feature is stated to be peculiar to the company's goods. The entire length of the rifle is 30 inches, and the weight is 2 pounds. The company's No. 2, Twentieth Century Take Down Daisy, is the same as the No. 1 without the magazine. The shooting barrel is so arranged that either shot or darts can be used. This feature is referred to as original with the company, and is found on both this rifle

fishing tackle. The make up is designed particularly for the country merchant, whose trade requires goods of this character, but the volume of which will not justify carrying much stock. This assortment of lines, floats, sinkers, hooks (plain and snelled) and trolling spoons includes 1232 separate articles, for which a covered box is provided, and should retail for \$13.54. Attention is called by the manufacturers to the advantage of

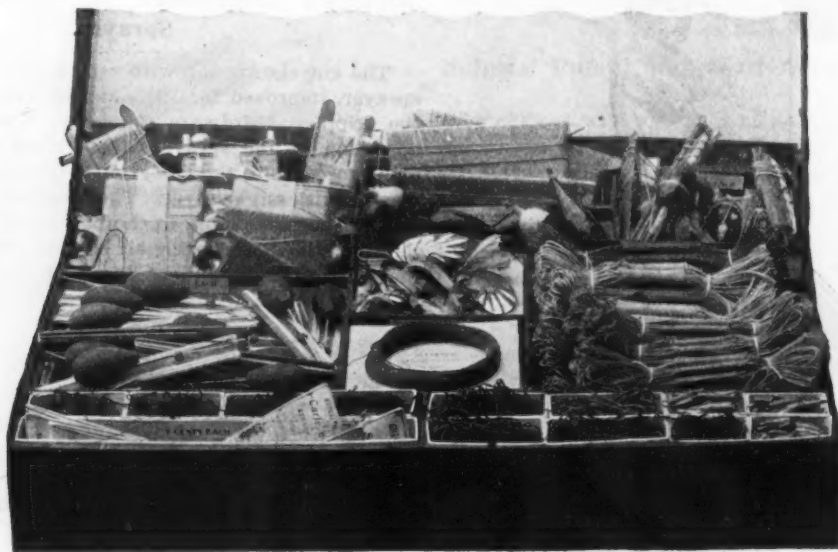


Fig. 2.—Sentinel Single Shot Air Rifle No. 4.

and their No. 4. By removing two screws the rifle can be taken apart and packed in a very small space for convenience in carrying or shipping. It has a full nickel-plated steel barrel, peep sights, genuine black walnut stock, highly polished, and all parts are interchangeable. The Sentinel Single Shot rifle, No. 4, shown in Fig. 2 has, it is pointed out, strength, durability, accuracy and a fine appearance. It is made entirely of steel, with all parts interchangeable. The barrel is nickel plated, the

having such an assortment of tackle and the attractive way in which the stock is displayed.

The Chicago Solar Light Company, manufacturers of the Nullite incandescent vapor gas lamps, 132 to 134 Lake street, Chicago, state that the demand for their lamps has grown beyond their expectations. The increase in their business has more than quadrupled in a



Fishing Tackle Assortment for Country Merchant.

stock is walnut, oval shaped, finished in hard oil, and is made with pistol grip. It shoots both shot and darts the same as the No. 2. The length is 32 inches, and weight 2 pounds. The company also make the Sentinel Repeater, No. 5. This is referred to as the only automatic break down repeating air rifle on the market. The magazine holds 303 shot. It is explained that the repeating device is positive and strong, impossible to get out of order, and that it will feed the last shot as well as the

year. They believe that this increased demand for their lamps has been caused by the excellence of the workmanship. They have just issued interesting circulars which give a full description of the variety of lamps which they have brought out and the special features of each style of construction. The variety shown comprises table lamps, student lamps, single pendants, chandeliers for 2, 3 or 4 lights, wall lamps, street lamps, outdoor arc lamps and indoor illuminators.

Current Hardware Prices.

REVISED FEBRUARY 4, 1902.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33½@33¼@10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33¼ and 10 per cent. discount.

Cut Prices.—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ½ doz. \$3.00... 33½@33¼@10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Jess' Patent... 25¢
Lapin's Perfection... 50¢

Ammunition—See Caps, Cartridges, Shells, etc.

Anvils—American—

Arnall Hammer, Wrought... 88¢
Arnall's Patent... 74¢
Arnall's Anvil... 74¢
Arnall's Hammer, Wrought... 88¢
Arnall's Anvil... 74¢

Imported—

Peter Wright's... 91¢@94¢

Anvil, Vise and Drill—

Waters Falls Co., \$18.00... 20%

Apple Parers—See Parers, Apple, etc.

Aprons, Blacksmiths'—

Lot of 1 doz... 25¢
Lot of 3 doz... 30¢

Augers and Bits—

Com. Double Spur... 70¢@70¢10%

Augers, Machine—

Car Bits, 12-in. twist... 60¢@60¢10%

Augers, Pattern—

Auger Bits... 60¢@60¢50%

Augers, Car Bits—

Auger Bits... 60¢@60¢50%

Augers, Car Bits—

Auger Bits... 60¢@60¢50%

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Auger Bits... 60¢@60¢50%

Augers, Car Bits—

Auger Bits... 60¢@60¢50%

Augers, Car Bits—

Auger Bits... 60¢@60¢50%

Axles—

Concord, Loose Collar... 4½¢@5¢

Concord, Solid Collar... 4½¢@5¢

No. 1 Common... 3½¢@4¢

No. 1 Solid, New Style... 3½¢@4¢

No. 1 Solid Collar... 3½¢@4¢

No. 11 to 13... 70¢@70¢10%

No. 15 to 17... 75¢@75¢10%

No. 19 to 21... 75¢@75¢10%

Boxes, Axle—

Common and Concord, not turned... 13.4¢@14¢

Common and Concord, turned... 13.4¢@14¢

Half Patent... 13.4¢@14¢

Half Patent... 13.4¢@14¢

Half Patent... 13.4¢@14¢

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Half Patent... 13.4¢@14¢

Half Patent... 13.4¢@14¢

Regular Short Lap—

Standard... 60¢@60¢10%

Light Standard... 60¢@60¢10%

Leather Lacing... 60¢@60¢10%

Leather Lacing... 60¢@60¢10%

Leather Lacing... 60¢@60¢10%

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Leather Lacing... 60¢@60¢10%

Leather Lacing... 60¢@60¢10%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch... 1 1/4 1 1/2 1 3/4 2

Per doz... \$4.50 5.00 5.75 7.25

Inch... 2 2 1/2 3 3 1/2 4

Per doz... \$6.50 7.50 8.50 11.50

Enterprise Mfg. Co., No. 1, \$1.35; No. 2, \$1.65; No. 3, \$2.50 each... 35%

Boring Machines—See Machines, Boring.

Boxes, Mitre—

C. E. Jennings & Co... 40%

Seaway's, per doz., \$30... 40%

Braces—

NOTE: Most Braces are sold at net prices.

Common Ball, American... \$1.15@1.25

Barber's... 60¢@60¢10%

Fray's Genuine Spotted... 40%

Fray's No. 70 to 120, 81 to 123, 207 to 414... 60%

C. E. Jennings & Co... 60%

Mayhew's Hatchet... 60%

Mayhew's Quick Action Hay Patent... 60%

P. S. & W. Co. Peck's Patent... 60%

P. S. & W. Co. Peck's Patent... 60%

P. S. & W. Co. Peck's Patent... 60%

P. S. & W. Co. Peck's Patent... 60%

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P. S. & W. Co. Peck's Patent... 60%

P. S. & W. Co. Peck's Patent... 60%

Gates, Molasses and Oil—
steebals.....55¢100¢105

Gauges—
Marling, Mortise, etc.....55¢100¢105
Barrett's Comb. Roller Gauge.....55¢100¢105
Stanley R. & L. Co.'s Butt & Habbet Gauge.....50¢100¢105
Wire, Brown & Sharpe's.....25¢
Wire, Morse's.....25¢
Wire, P. S. & W. Co.....30¢100¢105

Climates—
Nail, Metal, Assorted, gro. \$1.40 @ 1.50
Spikes, Metal, Assorted, gro. \$2.30 @ 2.25
Nail, Wood Handled, Assorted, gro. \$1.75 @ 2.00
Spikes, Wood Handled, Assorted, gro. \$2.50 @ 2.50

Glass, American Window
Jobbers' List, Jan. 31, 1901
From store.....50¢100¢105
F.O.B. factory, carload lots:
Single strength.....50¢100¢105
Double strength.....50¢100¢105

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush.....37¢ @ 50¢
List B, Cans (1/4 pt., 1/2 pt., 1 qt.).....35¢ @ 15¢
List C, Cans (1/4 gal., 1/2 gal.).....25¢ @ 15¢
International Glue Co. (Martin's).....40¢100¢105

Glue Pots—See Pots, Glue.
Grease, Axle—
Common Grade.....gro. \$5.00 @ 6.00
Dixon's Everlasting.....10¢ per pail, ea. 55¢
Dixon's Everlasting, in bxs., 1/2 doz. 1 m.....\$1.50; 3/4 doz. 2 m.....\$3.00

Snow Flake:
1 qt. cans, per doz. \$2.00; 3 qt., \$3.20; 1/2 gal. cans, per doz. \$5.00; 1 gal., \$10.00; 5 gal. \$24.00

Grindstones—
Bicycle Emery Grindstone.....\$6.50
Bicycle Grindstones, each.....\$2.50 @ 3.00
Pike Mfg. Co.
Improved Family Grindstones,
per litch, per doz.....\$3.00 @ 35¢
Pike Mfg. Co. Knife and Tool
Grinder, each.....\$9.00
Velox Ball Bearing, mounted, Anglo
Iron Frames.....each, \$3.25

Guards Snow—
Copper and Wire, 100 ft. Co.
Galv. Steel 1/2 doz.....\$9.00
Copper 1/2 doz.....\$18.00

Cut Powder—See Powder.
Jack Saws—See Saws.

Halts Awi—
Peg Patent, Leather Top.....\$4.50 @ 5.95
Peg Patent, Plain Top.....\$3.50 @ 3.75
Sewing, Brass Ferrule.....\$1.50 @ 1.90
Saddlers', Brass Ferrule.....\$1.35 @ 1.55
Peg, Common.....\$1.25 @ 1.35
Brad, Common.....\$1.50 @ 1.75

Halters and Ties—
Covert Mfg. Co.:
Web.....45¢ @ 55¢
Jute Rope.....45¢ @ 55¢
Sisal Rope.....50¢ @ 55¢
Covert's Saddlery Works:
Web and Leather halters.....70¢
Jute and Manila Rope Halters.....70¢
Sisal Rope Halters.....70¢
Jute, Manila and Cotton Rope Ties.....70¢
Sisal Rope Ties.....70¢ @ 80¢

Handled Hammers—
Holler's Machinists'.....50¢ @ 50¢
Holler's Farriers.....50¢ @ 50¢
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Hammered Hammers—
Holler's Machinists'.....50¢ @ 50¢
Holler's Farriers.....50¢ @ 50¢
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Hammered Hammers—
Holler's Machinists'.....50¢ @ 50¢
Holler's Farriers.....50¢ @ 50¢
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165,

Ladles—Melting—
L. & W. Mfg. Co. 25¢
P. & W. 50¢
Reading 50¢
Sargent's 50¢
Burgess's 50¢

Lanterns—Tubular—
Regular Tubular 20¢
Light Tubular 20¢
Hinge Tubular 20¢
Other Styles 20¢

Bull's Eye Police—
No. 1, 2 1/2 inch \$3.60
No. 2, 3 inch \$4.00

Latches, Thumb—
Roggin's Latches 30¢ to 50¢

Lawn Mowers—
See Mowers, Lawn.

Leaders Cattle—
Small 50¢; large, 55¢
Covert Mfg. Co. 55¢

Lemon Squeezers—
See Squeezers, Lemon.

Lifters, Transom—
Solid Grip, Rayson Mfg. Co. 80¢
R. & W. 45¢

Lines—
Wire Clothes, No. 18 19 20
100 feet \$1.20 1.30 1.45
75 feet \$1.80 1.70 1.50

Osawaw Mills—
Crown Solid Braided Chalk 33¢
Mason's, No. 0 to No. 5 33¢
Samson Cordage Works 33¢
Solid Braided Chalk, No. 0 to 5 10¢
Silver Lake Braided Chalk, No. 0, \$6.00;
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50
No. 4, \$8.00; No. 5, \$8.50

Locks—Cabinet—
Cabinet Locks 35¢ to 45¢
Door Locks, Latches, &c.
[Net prices are very often made on
these goods.]
Reading Hardware Co. 60¢
R. & E. Mfg. Co. 70¢
Sargent & Co. 40¢ to 100¢

Elevator—
Stowell's 40¢

Padlocks—
Wrought Iron 7¢ to 10¢ to 30¢
R. & E. Mfg. Co. Wt. Steel and Brass 50¢
Sash, &c.

File's—
Bronze and Brass 60¢
Iron 70¢
Ives' Patent 60¢
Bronze and Brass 60¢
Iron 70¢
Wrought Steel 60¢
Payson's Signal 80¢
Reading 80¢ to 100¢

Machines—Boring—
Common, Upright, Without Augers,
Common, Angular, Without Augers,
Without Augers.
R. & E. Mfg. Co.: Upright, Angular,
Improved No. 3, \$1.25 No. 1, \$3.00
Improved No. 4, 3.75 No. 2, 3.35
Improved No. 5, 3.75
Jennings' 2.50 3.00
Miller's Falls 5.75
Snell's, Rice's Pat. 2.50 2.75
Evan's, No. 600, 5.10 No. 800 6.45

Hoisting—
Moore's Anti-Friction Differential Pul-
ley Block 30¢
Moore's Hand Hoist, with Lock Brake 30¢
Moore's Portable Pneumatic Hoist, 30¢
Ice Cutting—
Chandler's 15¢
Wayne American 20¢
Western Star, No. 2 20¢
Western Star, No. 3 30¢
St. Louis, No. 41 60¢

Mallets—
Hickory 45¢ to 50¢
Lignumvite 45¢ to 50¢
Tynners', Hickory and Applewood,
doz. 60¢ to 55¢

Mats—Door—
Elastic Steel (W. G. Co.) 10¢

Mattocks—
See Picks and Mattocks.

Meat Cutters—
See Cutters, Meat.

Milk Cans—See Cans, Milk.

Mills—Coffee—
Enterprise Mfg. Co. 25¢ to 30¢
National, list Jan. 1, '94 30¢
Parker's Columbia and Victor 40¢
Parker's Box and Slide 50¢ to 100¢
Swift, Lane Bros. 30¢

Mining Knives—
See Knives, Mining.

Molasses Gates—
See Gates, Molasses.

Money Drawers—
See Drawers, Money.

Mowers Lawn—
Net prices are generally quoted.
Cheap all sizes, \$1.20 to 1.95
Good all sizes, \$2.25 to 2.50
10 12 14 16 inch
High Grade 4.25 4.50 4.75 5.00
Continental 40¢ to 50¢
Great American 70¢ to 80¢
Great American Ball Bearing 40¢ to 50¢
Quaker City 70¢ to 80¢
Pennsylvania Golf 20¢ to 30¢
Pennsylvania Horse 70¢
Pennsylvania Pony 45¢
Philadelphia:
Styles M., S., C., K., T. 70¢ to 80¢
Style A, all Steel 60¢ to 70¢
Style B, Low Wheel 60¢ to 70¢
Style C, High Wheel 70¢ to 80¢
Drexel and Gold Coin, low list 50¢ to 60¢

Nails—
Out and Wire. See Trade Report.
Wire Nail and Brads, Papered.
List July 30, 1899. 85¢ to 10¢ to 100¢

**Hungarian, Finishing, Upholster-
ers', &c. See Tacks.**

Horse—
Nos. 6 7 8 9 10
A. O. 25¢ 25¢ 25¢ 25¢ 25¢
Ausable 25¢ 25¢ 25¢ 25¢ 25¢
O. B. K. 25¢ 25¢ 25¢ 25¢ 25¢
Champion 25¢ 25¢ 25¢ 25¢ 25¢
Clinton 19¢ 17¢ 15¢ 15¢ 14¢
Maud S. 25¢ 25¢ 25¢ 25¢ 25¢
Putnam 25¢ 25¢ 25¢ 25¢ 25¢
Vulcan 25¢ 25¢ 25¢ 25¢ 25¢
American, Nos. 10 11 12 13 14
Neposet Nos. 5 6 7 8 9 10 11 12 13 14
Jobbers' special brands, per lb. 8¢ to 9¢

Picture—
Brass Head, 1 1/2 2 3/4 3 3 1/2 in.
Por. Head, 1.10 1.10 1.10 1.10 gro.
1.10 1.10 1.10 1.10 gro.

Nippers, See Pliers and Nippers.

Nut Crackers—
See Crackers, Nut.

Nuts—
Cold Punched: Off Hat.
Mfrs. or U. S. Standard.
Square, plain, \$5.00 to \$5.10
Hexagon, plain, \$5.30 to \$5.10
Square, C. T. & R. \$5.20 to \$5.30
Hexagon, C. T. & R. \$5.50 to \$5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stand.
Square Blank \$5.10 to \$5.30
Hexagon Blank \$5.30 to \$5.90
Square Tapped \$5.00 to \$5.10
Hexagon Tapped \$5.50 to \$5.70

Oakum—
Best or Government lb. 64¢
Navy lb. 6 c
U. S. Navy lb. 64¢
Plumbers' Spun Oakum 54¢
In carload lots 1/2 lb. off f.o.b. New
York.

Oil Axle—
Snow Flake:
1 pt. cans, per doz. \$3.00
1 qt. cans, per doz. \$4.80
1 gal. cans, per doz. \$15.00
5 gal. cans, per doz. \$68.00

Oil Tanks—See Tanks, Oil.

Oilers—
Brass and Copper 40¢ to 100¢
Tin or Steel 60¢ to 100¢
Zinc 60¢ to 100¢
Paragon:
Brass and Copper 40¢ to 100¢
Tin or Steel 60¢ to 100¢
Zinc 60¢ to 100¢
Malleable, Hammer's Improved, No. 1
\$3.60; No. 2, \$4; No. 3, \$4.40; No. 4, 20¢
Malleable, Hammer's Old Pattern,
same list 50¢ to 100¢
Wilcox & Hobbs Mfg. Co.:
Spring Bottom Cans 70¢ to 100¢
Railroad Oilers etc. 60¢ to 100¢

Openers—Can—
French doz. 35¢
Iron Handle doz. 25¢ to 30¢
Sprague, Iron Handle, per doz. 35¢ to 40¢
Sardine Scissors, doz. \$1.75 to \$2.00
Tip Top per doz. 35¢ to 45¢
National, 7 gro. \$1.75 to \$2.00
Stowell's per doz. 35¢ to 45¢
Waldorf, 7 gro. 45¢

Egg—
Nickel Plate per doz. 32.25
Silver Plate per doz. 33.50

Packing—
Asbestos Packing, Wick and Rope,
Rubber—
Sheet, C. I. 8¢ to 15¢
Sheet, C. O. S. 10¢ to 15¢
Sheet, C. B. S. 10¢ to 15¢
Sheet, Pure Gum 50¢ to 70¢
Sheet, Red 35¢ to 40¢
Jenkins' Standard, 2 1/2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Miscellaneous—
American Packing 7¢ to 10¢ lb.
Cotton Packing 15¢ to 10¢ lb.
Italian Packing 10¢ to 15¢ lb.
Jute 5¢ to 10¢ lb.
Russia Packing 7¢ to 10¢ lb.
Pails—Creamery
S. & Co., with gauges, No. 1 \$6.50;
No. 2, \$7.75; No. 3, \$8.50

Galvanized—
Price per gro.
Quart. 10 12 14
Water, Regular 18.00 21.00 24.00
Water, Heavy 24.00 27.00 30.00
Fire, Rd. Bottom 51.00 55.00 59.00
Well 27.00 29.00 31.00

Pans—Dripping—
Standard List 50¢ to 100¢

Fry—
Common Lipped:
No. 1 2 3 4 5
Per doz. \$0.50 .75 .85 .95 1.15
Roasting and Baking—
Regal, S. S. & Co., 7 doz. Nos. 3, \$4.50;
10 \$5.00; 20 \$5.50; 30 \$6.00
Simplex, 7 gro. No. 40 \$30.00; 50,
\$34.50; 60 \$39.00; 140, \$49.00; 150,
\$57.50; 160, \$49.00.

Paper-Building Paper—
Asbestos: lb.
Building Felt 8¢
Mill Board, sheet, 10 x 10 inches, 4c
Mill Board, roll, thicker than 1-16
inch 8¢
Mill Board, roll, 1-16 in. thick and
less 8¢
Per roll
Rosa Sized Sheathing: 500 sq. ft.
Light wt., 20 lbs. to roll \$0.25
Medium wt., 30 lbs. to roll \$0.47
Heavy wt., 40 lbs. to roll \$0.63
Medium Grades Water, Proof
Sheathing \$0.55 to 1.35
Deafening Felt, 9, 6 and 1 1/2 sq. ft.
to lb., ton \$10.00 to \$2.00

**Red Rope Roofing, 250 sq. feet per
roll \$1.65**

Tarred Paper.
1 ply (roll 500 sq. ft.), 100 \$30.00
2 ply, roll 100 sq. ft. 40¢ to 50¢
3 ply, roll 100 sq. ft. 60¢ to 80¢
Slater's Felt (roll 500 sq. ft.), 60¢ to 80¢
K. R. M. Stone Surfaced roofing (roll
110 sq. ft.) \$2.75

Sand and Emery—
List Dec. 23, 1899 60¢ to 100¢

Parers—Apple—
Advance doz. \$4.50
Baldwin doz. 45.00
Bonanza each 45.00
Dandy each 47.50
Kureka, 1898 each 48.00
Family Bay State doz. \$12.00
Hudson's Little Star doz. \$4.00
Hudson's Looking Table doz. \$5.50
Improved Bay State doz. \$7.00 to \$8.00
New Lightning doz. \$5.50
Reading 72 doz. \$4.00
Reading 78 doz. \$7.00
Turn Table '98 doz. \$5.50
White Mountain doz. \$4.00

Potato—
Saratoga doz. \$5.50
White Mountain doz. \$4.50

Paris Green—
Arsenic kegs or casks 11 @ 12 c
Kegs, 100 to 175 lbs. 11 1/2 @ 12 1/2 c
Kite, 14, 23, 56 lbs. 12 1/2 @ 13 1/2 c
Paper boxes, 2 to 5 lbs. 12 1/2 @ 13 1/2 c
Paper boxes, 1 lb. 12 1/2 @ 13 1/2 c
Paper boxes, 1/2 lb. 12 1/2 @ 13 1/2 c
Paper boxes, 1/4 lb. 12 1/2 @ 13 1/2 c

Picks and Mattocks—
List Feb. 23, 1899 70¢ to 100¢

Pigeons—Clay
Mark's Black Birds, f.o.b. factory,
per M. \$3.75
See also Traps, Target.

Pinking Irons—
See Irons, Pinking.

Pins—Escutcheon—
Brass 60¢
Iron, list Nov. 11, '85 60¢

Pipe, Cast Iron Soil—
Standard, 2-6 in. 60¢ to 7 1/2¢
Extra Heavy, 2-6 in. 70¢
Fittings 75¢ to 80¢

Pipe, Merchant, Boiler
Tubes, &c.—
Merchant Pipe. Black. Galva-
nized
1/2 to 1 1/2 inch 61 1/2 45 1/2
3/4 to 10 inch 63 1/2 50 1/2
Boiler Tubes. Up to
2 1/2 feet
1 to 1 1/2 inch and 3/4 to 5 inch in-
clusive 65 1/2 45 1/2
2 to 2 1/2 inch, inclusive 65 1/2 45 1/2
6 to 10 inches 69 1/2 45 1/2
11 to 1 1/2 inch and 2 1/2 in. 43 1/2 45 1/2
1 1/2 to 3 in. 45 1/2 45 1/2
3/4 to 1 1/2 inch 50 1/2 45 1/2
2 1/2 to 3 inch 50 1/2 45 1/2
Casing, Cut Lengths. S. & S.
2 to 3 inch 63 1/2 45 1/2
3 1/2 to 4 inch 65 1/2 45 1/2
4 1/2 to 1 1/2 inch 61 1/2 45 1/2

Pipe Sewer—
Standard Pipe and Fittings, 2 to 2 1/2 in.
New England 70¢
New York and New Jersey 73¢
Ohio and Michigan 75¢
Carload lots are generally delivered.

Planes and Plane Irons—
Wood Planes—
Molding 10¢ to 15¢
Bench, First quality 15¢ to 10¢ to 15¢
Bench, Second qual. 10¢ to 10¢ to 15¢
Bailey's (Stanley R. & L. Co.)
25¢ to 10¢ to 25¢ to 10¢ to 10¢
35¢ to 10¢ to 25¢ to 10¢ to 10¢
Gage Self Setting 35¢

Iron Planes—
Bailey's (Stanley R. & L. Co.) 10¢ to 15¢
Paragon Iron Planes 50¢ to 100¢
Miscellaneous Planes (Stanley R. & L.
Co.) 25¢ to 10¢ to 25¢ to 10¢ to 10¢
Sargent's 50¢ to 100¢

Plane Irons—
Wood Bench Plane Irons 30¢ to 50¢ to 100¢
Buck Bros. 30¢
Stanley R. & L. Co. 20¢ to 10¢ to 10¢ to 10¢
L. & J. W. 20¢ to 25¢
Kohl's Collapsible 30¢

Plates—
Felloe lb. 3 1/2 to 4
Self-Sealing Pie Plates (S. S. & Co.), 7
doz. \$2.00 50¢

Pliers and Nippers—
Butt Pliers 70¢ to 100¢
Gas Burner, per doz., 5 in., \$1.15;
\$1.20; 6 in., \$1.35 to \$1.45
Gas Pipe, 7 8 10 12 in.
\$1.75 \$2.00 \$2.75 \$3.75
Acme Nippers 50¢ to 50¢ to 50¢
Bernard's:
Parallel Pliers, &c. 35¢
Lodi Pliers 50¢ to 50¢
Elm City Fence Pliers 35¢
Cronk Hanger Co.:
American Button 75¢ to 100¢
Cronk's 70¢ to 100¢
Improved Button 70¢ to 100¢
Stub's Pattern 50¢
Combination and others 25¢
Heller's Farriers' Nippers, Pincers
and Tools 50¢ to 50¢
P. S. & W. Tinnors' Outing Nippers,
Swedish Steel, End and Diagonal Cut-
ting Pliers 80¢
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40¢

Plumbers and Levels—
Plumbers and Levels 50¢ to 75¢ to 100¢
Davis Iron, Machinist Nos. 1 to 11 20¢
Davis Iron, Adjustable Nos. 6 to 40 35¢
Dixon's 70¢
Pocket Levels 73¢ to 10¢ to 75¢ to 100¢
Stanley R. & L. Co. 40¢ to 10¢ to 100¢

Stanley's Duplex 20¢ to 100¢ to 100¢

Woods' Extension 33¢

Poachers, Egg—
Buffalo Steam Egg Poachers, 7 doz.
No. 1, \$7.20; No. 2, \$11.00 No. 3,
\$11.00; No. 4, \$14.50 50¢

Points, Glaziers—
Bulls and 1 lb. papers, lb. 8¢
1/2 lb. papers, lb. 8¢
1/4 lb. papers, lb. 9¢

Pokes, Animal—
Ft. Madison Hawkeye 20¢ to 30¢
Ft. Madison, Western 20¢ to 30¢

Police Goods—
Manufacturers' Lists 25¢ to 30¢
Tower's 25¢

Polish—Metal—
Prestolite Liquid, No. 1 (1 qt.), 70¢
\$3.00; No. 2 (1 qt.), \$0.72 40¢
Prestolite Paste 40¢ to 100¢
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, 4
doz. 50¢; 7 gr. \$4.50; 1/2 lb. boxes, 7
doz. \$1.35; 1 lb. boxes, 7 doz. \$2.25
U. S. Liquid, 3 oz. cans, 7 doz. \$1.25;
7 gr. \$12.00
Barkeepers' Friend Metal Polish, 7 doz.
\$1.75; 7 gr. \$18.00
Wynn's White Silk, 1/2 pt. cans, 7
doz. \$2.00

Stove—
Black Eagle Benzine Paste, 5 lb. cans 10¢
Black Eagle, Liquid, 1/2 pt. cans 10¢
Black Jack Paste, 1/2 lb. cans, 7 doz. 75¢
Ladd's Black Beauty, gr. \$10.00 50¢
Joseph Dixon's, 7 gr. \$5.75 100¢
Dixon's Plumbago 7 gr. \$2.50
Firestone 7 gr. \$2.50
Gem, 7 gr. \$4.50 100¢
Japanese 7 gr. \$3.50
Jet Black 7 gr. \$3.50
Peerless Iron Enamel, 1/2 pt. cans 10¢
Wynn's:
Black Silk, 5 lb. pail each 75¢
Black Silk, 1/2 lb. box 7 doz. \$1.50
Black Silk, 3 oz. box 7 doz. \$1.75
Black Silk, 1/2 pt. liq. 7 doz. \$1.50

Poppers, Corn—
Round or Square:
1 qt. gro. \$7.00 to \$7.50
1 1/2 qt. gro. 9.50 to 10.00
2 qt. gro. 10.50 to 11.00

**Post Hole and Tree Au-
ers and Diggers—**
See also Diggers, Post Hole, &c.

Potato Parers—
See Parers, Potato.

Pots—Glue—
Enameled 15¢
Tinned 15¢

Powder—
In Canisters:
Duck, 1 lb. each 15¢
Fine Sporting, 1 lb. each 15¢
Rifle, 1/2 lb. each 15¢
Rifle, 1 lb. each 15¢

In Kegs:
Duck, 6 1/2 lb. kegs 25¢
Duck, 12 1/2 lb. kegs 25¢
Duck, 25 lb. kegs 25¢
Rifle, 6 1/2 lb. kegs 25¢
Rifle, 12 1/2 lb. kegs 25¢
Rifle, 25 lb. kegs 25¢

King's Semi-Smokeless:
Keg (25 lb. bulk) \$4.50
Half Keg (12 1/2 lb. bulk) \$4.50
Quarter Keg (6 1/2 lb. bulk) \$4.50
Case 24 (1 lb. cans bulk) \$4.50
Half case (1 lb. cans bulk) \$4.50
King's Smokeless—Shot Gun Rifle:
Keg (25 lb. bulk) \$12.00
Half Keg (12 1/2 lb. bulk) 9.25
Quarter Keg (6 1/2 lb. bulk) 4.00
Case 24 (1 lb. cans bulk) 14.00
Half case (1 lb. cans bulk) 7.25

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. 30¢ to 25¢

Seal Presses—
Morrell's No. 1, per doz. \$20.00 20¢
Morrell's No. 2, per doz. \$22.50 25¢

**Pruning Hooks and
Shears—See Shears.**

Puliers, Nail—
Cyclops 40¢ to 40¢ to 100¢
Miller's Falls, No. 3, per doz. \$12.00 13¢ to 100¢
Pearson No. 1, Cyclone Spike Pulley
each \$30.00 50¢
Peacock, 7 doz. \$9.00 40¢ to 100¢
Samson 7 doz. \$15.00
Seranton, Case Lots:
No. 1 (large), 7 doz. \$8.50; No. 2 (large),
\$5.75; No. 3 (small), \$5.00; No. 2-B (large),
\$5.50; No. 3-B (small), \$4.00; No. 2-D
(large), \$4.50; No. 3-D (small) \$4.00.
Smith & Hemenway Co.:
Diamond B. No. 2, ca. e. lots, 7 doz. \$6.00
Diamond B. No. 2, ca. e. lots, 7 doz. \$5.50
Giant, No. 1, 7 doz. \$18; No. 2, \$16.50;
No. 3, \$15.

Pulleys—Single Wheel—
Inch 2 1/2 3 4 5
Auming 2 1/2 3 4 5
Inch 2 1/2 3 4 5
Hay Fork, Swivel or Solid Eye 2 1/2 3 4 5

Hot House, doz. 14 14 14 14 14

Screws, doz. \$0.15 .20 .25 .30 .35

Side, doz. \$0.50 .50 .50 .50 .50

Tackle, doz. \$0.30 .35 .40 .45 .50

Stowell's:
Ceiling or End, Anti-Friction 60¢
Dunn Walter, Anti-Friction, 40¢ to 100¢
Hay Fork, Anti-Friction, 5-in. Wheel,
7 doz. \$12.00 50¢
Electric Light 60¢
Slide, Anti-Friction 60¢ to 100¢

Sash Pulleys—
Common Frame: Square or Round,
End per doz., 14 in., 15c; 1 in., 15c
Auger Mortise, no Face Plate, per
doz., 14 in., 15c; 2 in., 15c
Auger Mortise, with Face Plate, per
doz., 14 in., 15c; 2 in., 15c

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.....
 \$ doz.....**\$9.00**

Nail—

Square.....per gro.**\$1.50**
Round, Bk. and Pol. assorted.....
 gro. \$1.80**\$2.50**
Octagon.....gro. \$4.25**\$6.75**
Knurled, Good.....gro. \$6.00**\$8.50**
Buck Brothers.....**\$7.50**
Cannon's Diamond Point, # gr. 12-13...**\$35**
Mayhew's.....per gro. **\$9.00**
Snell's Corrugated, Cup Ft. per gro. **\$7.50**
Snell's Knurled, Cup Ft. per gro. **\$7.50**

Regular list.....		70@70c10c5%	
Saw—			
Alken's.....			
Genuine.....	7 doz.	\$5.50@6.00	
Imitation.....	7 doz.	\$3.00@3.19	
Alkin's.....			
Criterion.....			40c
Adjustable.....			40c
Bemis & Call Co.'s.....			40c
Cross Cut.....			80c
Hammer, new Pat.....			45c
Plate.....			20c
Spring Hammer.....			30c
Disston's Star and Monarch.....			25c
Morrill's No. 1.....	\$15.00		50c
Nos. 3 and 4.....	Cross Cut, \$20.00		50c
Nos. 5, 10, 11.....	\$30.00		50c
Nos. 10, 11, 95.....	\$15.00		50c
No. 1 Old Style.....	\$10.00		50c
Taintor Positive.....	4 doz.	\$18.00	60c

Sharpeners Knife-		
Chicago Wheel & Mfg. Co.	.....	55c
Smith & Weyenway Co.	.....	70 & 85c
Chicago Mill & Lumber Co.	.....	\$1.40, .35 & .33 & 4c
Sharpeners Skates		
Eureka Skate Sharpener.....	per doz.	\$2.00
Shaves Spoke		
Iron.....	doz.	\$1.00 to \$1.95
Wood.....	doz.	\$1.75 to \$2.00
Ball's (Stanley R. & L. Co.)	50, 250 & 100 doz.	10c to 10c
Goodell's, per doz.	\$9.00	15 & 10c
Shears-		
Cast Iron.....	7	8
Best.....	\$16.00	13.00 20.00 gro.
Good.....	\$13.00	16.00 17.00 gro.
Chicago's.....	\$8.00	8.00 7.00 gro.
Shear, Trimmers, &c.		
Best quality, Jap.....	70c to 70c 10c	60c to 10c
.....	Nickel.....	70c to 70c 10c
Fair qual. Jap.....	80c to 80c 10c	60c to 10c
.....	Nickel.....	75c to 75c 10c
Tailors' Shears.....		
Acme Cast Shears.....	40c to 40c 10c	40c to 40c 10c
Heinrich's Tailors' Shears.....	40c	40c
Wharton's.....	40c	40c
Wilkinson's Sheep.....	1000 lb.	50c

Tinners' Snips—

Steel Blades.....	20¢10¢
Steel Laid Blades.....	40¢10¢
Forged Handles, Steel Blades, Berlin.....	40¢40¢10¢
Jennings & Griffin Mfg. Co.'s 7 to 10 Inch.....	50¢
Nagler Snips.....	40¢
P. & W. Co.....	30¢
Pruning Shears and Tools—	
Cronk's Grape Shears.....	30¢
Cronk's Pruning Shears.....	33¢
Diaston's Combined Pruning Hook and Saw, 7 & 8. \$19.00.....	25¢25¢10¢
Diaston's Pruning Hook, 7 and 8.....	25¢25¢10¢
John T. Henry Mfg. Company.....	25¢35¢25¢
Pruning Shears, all grades.....	40¢40¢15¢
Orange Shears.....	50¢10¢50¢20¢
Grape.....	40¢10¢50¢
Tree Pruners.....	75¢
Nagler's Pruning Shears.....	10¢75¢
P. & W. Co.....	

Sheaves—Sliding Door—
Stowell's Anti-Friction.....50¢
Patent Roller Hatfield's, Sargent's.....75¢10¢10¢
Reading.....70¢10¢75¢
R. & E. list.....89¢4¢
Wrightsville, Hatfield Pattern.....80¢

Sliding Shutter—
Reading list.....70¢10¢75¢
R. & E. list.....89¢4¢
Sargent's list.....50¢10¢10¢

Shells— Shells, Empty—
Bras. She's Empty:
First quality, all gauges.....60¢25¢
Climax, Club, Rival, 10 and 18 gauge.....65¢85¢
Bras. Shell, Empty:

Apple Shell, Loaded, New Rapid, 25¢
 Magic 10, 12, 16 and 30 gauge, 25¢
 Blue Rival, New Climax, Challenge,
 Monarch, DeFance, New Victor, Ro-
 post-r, Yellow Rival, 10, 12, 16 and
 30 gauge, 25¢
 Climax Union, League, New Rival,
 10 and 12 gauge, 35¢
 Climax Union, League, New Rival,
 14, 16 and 20 gauge (\$7.50 list), 20¢
 Expert Metal Lined and Pigeon, 10,
 12, 16 and 30 gauge, 33¢45¢

Shells, Loaded—
 Loaded with Black Powder, 10¢
 Loaded with Smokeless Powder,
 medium grade, 10¢
 Loaded with Smokeless Powder,
 high grade, 10¢

Shoes, Horse, Mule, &c.
F. o. b., Pittsburgh.

Iron.....	per keg \$3.60
Steel.....	per keg \$3.55
Burden's, all sizes, $\frac{1}{2}$ keg.....	\$9.60

Shot-

Drop, up to B, 25-lb. bag.....	\$1.35
Drop, B and larger, per 25-lb. bag.....	\$1.00

Buck, 25-lb. bag.....
Chilled, 25 lb. bag.....
Just Shot, 25-lb. bag.....
Marble's Chilled.....
Diamond Chilled.....

Shovels and Spades—
Association list.....40%
Note.—Common Plain Back Shovels are
generally sold by jobbers at \$4.75 to \$7.00.

Brass Surface:	
Brass King, Single Surface, open back	\$3.00
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface	\$3.00
Washers—	
Leather, Axle—	
Solid.....	85¢ 10¢ 10¢ 10¢ 10¢ 10¢
Patent.....	85¢ 10¢ 10¢ 10¢ 10¢ 10¢
Coil: 3/4 1 1 1/2 1 3/4 1 1/2	
10c 11c 12c 13c per 100	
Iron or Steel—	
Size bolt.....	5-16 3/4 1/2 5/8 3/4
Washers.....	\$6.10 4.0 2.0 2.10 2.5
In lots less than one keg add 1/4c per	
box, 5-bb. boxes add 1/4c to list.	
Cast washers—	
Over 1/2 inch. barrel lots. per lb.....	1 1/4¢ 1 1/2¢
Washer Cutters—	
See Cutters, Washer.	
Washing Machines—	
See Machines, Washing.	
Water Coolers—	
See Coolers, Water.	
Wedges—	
Oil Finish.....	lb. \$2.00 3.10c
Weights, Sash	
Per ton, f.o.b. factory.....	\$11.00 12.00

Some Foundries make price \$1.00 lower.	
Well Buckets, Galvanized	
See Pails, Galvanized.	
Wheels Well—	
8-in. \$1.45 1.65: 10-in. \$1.75 2.00:	
12-in. \$2.35 2.50: 14-in. \$3.50 3.75	
Wire and Wire Goods—	
Bright and Annealed:	
6 to 9.....	72 1/2¢ 7 1/4¢ 10 1/2¢
10 to 18.....	72 1/2¢ 10 1/2¢ 10 1/2¢
19 to 26.....	75¢ 10 1/2¢ 10 1/2¢
27 to 36.....	75¢ 10 1/2¢ 10 1/2¢
Galvanized:	
6 to 18.....	70¢ 70¢ 70¢
19 to 26.....	72 1/2¢ 72 1/2¢ 72 1/2¢
27 to 36.....	72 1/2¢ 72 1/2¢ 72 1/2¢
Coppered:	
6 to 9.....	70¢ 70¢ 70¢
10 to 18.....	70¢ 70¢ 70¢
19 to 26.....	75¢ 75¢ 75¢
27 to 36.....	75¢ 75¢ 75¢
Tinned:	
6 to 14.....	75¢ 75¢ 75¢
15 to 18.....	75¢ 75¢ 75¢
19 to 26.....	70¢ 70¢ 70¢
27 to 36.....	70¢ 70¢ 70¢
Annealed Wire on Spools—	
70¢ 70¢ 70¢	

Brass and Copper Wire on Spools—	
60¢ 65¢ 60¢ 10¢	
Brass, list Feb. 26, '96.....	85¢
Copper, list Feb. 26, '96.....	15¢
Cast Steel Wire.....	60¢
Stubs Steel Wire.....	\$6.00 to \$2.40
Wire Cloth Line, see Line.	
Wire Picture Cord, see Cord.	
Bright Wire Goods—	
Case April 1, 1901.....	85¢ 10¢
Wire Cloth and Netting—	
Galvanized Wire Netting, 8 1/2¢ 30¢.....	
Painted Screen Cloth per 100 ft.....	\$1.00
Light Hardware Grade:	
2-13 Mesh. Plain (Sc. list) 87 ft.....	14¢ 14¢
2-13 Mesh. Galv. (Sc. list) 87 ft 2 1/4¢ 2 1/4¢	
Wire, Barb—See Trade Report.	
Wire Rope—See Rope, Wire.	
Wrenches—	
Agricultural.....	70¢ 10¢ 75¢ 5¢
Acce.....	5¢ 10¢
Aluminum.....	50¢ 10¢
Baxter's S.....	60¢ 10¢
Bull Dog.....	70¢
Bennis & Co's.....	35¢ 1/2
Adjustable S PIPES.....	10¢
Bridge's Pattern.....	30¢ 10¢
Combination Black.....	40¢ 5¢
Combination Bright.....	40¢

Cylinder or Gas Pipe.....	55¢
Extra Heavy.....	45¢
Merrick's Pattern.....	50¢
No. 3 Pipe, Bright.....	55¢
Handley Automatic.....	30¢
Boarman's.....	38 1/2¢
Coe's Genuine.....	40¢ 10¢ 5¢ 5¢
Coe's Mechanic.....	40¢ 10¢ 5¢ 5¢
Conchue's Engineer.....	40¢ 10¢
Eagle.....	50¢ 10¢
Elgin Wrenches.....	40¢
Elgin Monkey Wrench Pipe Jaws.....	38 1/2¢
Gem Pocket.....	30¢
Hercules.....	70¢
Knife Hand e, Machinists' (W. & B.).....	40¢ 10¢
Less than one lot.....	50¢ 10¢
Improved Pipe (W. & B.).....	50¢ 50¢ 10¢
Solid Handles, P. S. & W.....	50¢ 50¢ 10¢
Triumph.....	40¢ 10¢
Vulcan Chain.....	50¢
Wrought Goods—	
Staples, Hooks, etc., list March 17	
Yokes Neck—	
Covert Sadlery Works, Trimmed Larders	
Covert Saddlery Works, Neck Yokes	
Centers.....	70¢
Yokes Ox, and Ox Rows—	
Fort Mallon's Farmers & Freighters	
list act	
Zinc—	
Sheet.....	lb 6¢ 6¢ 1/2¢

PAINTS, OILS AND COLORS—Wholesale Prices.

White Lead, Zinc, &c.	
Lead, English white, in Oil.....	3/4¢ 9/8¢
Lead, American White, in Oil:	
Lots of 500 lb or over.....	8¢ 1/2
Lots less than 500 lb.....	8¢ 1/4
Lead, White, in oil, 35 lb tin	
pails, add to keg price.....	1/4¢
Lead, White, in oil, 13 1/2 lb tin	
pails, add to keg price.....	1¢
Lead, White, in oil, 1 to 3 lb	
sorted tins, add to keg price.....	1 1/4¢
Lead White, Dry in bbls.....	5 1/4¢ 6¢
Lead, American, Terms: On lots of 500	
lbs. and over, 60 days, or 25 for cash if	
paid in 15 days from date of invoice.	
Zinc, American, dry.....	4 1/2¢ 4 1/4¢
Zinc, Paris, Red Seal, dry.....	9 1/2¢
Zinc, Paris, Green Seal, dry.....	9 1/2¢
Zinc, Antwerp, Red Seal, dry.....	8 1/2¢
Zinc, Antwerp, Green Seal, dry.....	8 1/2¢
Zinc, V. M. French, in Poppy Oil,	
Green Seal:	
Lots of 1 ton and over.....	12¢ 12 1/2¢
Lots of less than 1 ton.....	12 1/2¢ 13 1/4¢
Zinc, V. M. French, in Poppy Oil,	
Red Seal:	
Lots of 1 ton and over.....	10 1/2¢ 11 1/4¢
Lots of less than 1 ton.....	11 1/4¢ 11 1/2¢
Discounts—V. M. French Zinc—Dis-	
counts to buyers of 10 bbl. lots of one or	
assorted grades, 15: 25 bbls., 25: 50	
bbls., 45.	
Dry Colors.	
Black, Carbon.....	5¢ 5 1/2¢
Black, Drop, Amer.....	4¢ 7¢
Black, Drop, Eug.....	7¢ 11¢
Black, Ivory.....	13¢ 21¢
Lamp, Com.....	4 1/2¢ 6¢
Blue, Celestial.....	4¢ 6¢
Blue, Chinese.....	38¢ 34¢
Blue, Prussian.....	38¢ 34¢
Blue, Ultramarine.....	4¢ 20¢
Brown, Spanish.....	14¢ 21¢
Brown, Vandyke, Amer.....	14¢ 21¢
Brown, Vandyke, Foreign.....	9 1/2¢ 8 1/2¢
Carmine, No. 40.....	22¢ 25¢ 27¢
Green, Chrome, ordinary.....	8¢ 6 1/2¢

Green, Chrome, pure.....	16¢ 20¢
Lead, Red, bbls. 1/2 bbls. and kegs:	
Lots 500 lb or over.....	5 1/4¢
Lots less than 500 lb.....	6¢
Litharge, bbls. 1/2 bbls. and kegs:	
Lots 500 lb or over.....	5 1/4¢
Lots less than 500 lb.....	6¢
Ocher, French Washed.....	1 1/4¢ 1 1/2¢
Ocher, Dutch Washed.....	4 1/2¢ 5¢
Ocher, American.....	10¢ 10.00 15.00
Orange Mineral, English.....	8¢ 8¢
Orange Mineral, German.....	11 1/2¢
Orange Mineral, American.....	8¢ 7 1/2¢
Red, Indian, English.....	4 1/2¢ 8 1/4¢
Red, Indian, American.....	3¢ 3 1/4¢
Red, Turkey, English.....	4¢ 6¢
Red, Tuscan, English.....	7¢ 10¢
Red, Venetian, Amer.....	100¢ 80¢ 1.75
Red, Venetian, English.....	100¢ 1.50 3.00
Sienna, Italian, Burnt and	
Powdered.....	3 1/2¢ 7 1/2¢
Sienna, Ital., Raw, Powd.....	3¢ 7 1/2¢
Sienna, American, Raw.....	1 1/4¢ 3¢
Sienna, American, Burnt and	
Powdered.....	1 1/4¢ 2¢
Talc, French.....	100¢ 1.25 1.50
Talc, American.....	90¢ 1.10
Terra Alba, French.....	100¢ 1.00
Terra Alba, English.....	95¢ 1.00
Terra Alba, American No. 1.....	1.00 1.05
Terra Alba, American No. 2.....	45¢ 50¢
Umber, Turkey, Raw & Powd.....	2 1/2¢ 3 1/4¢
Umber, Bnt. Amer.....	1 1/2¢ 2¢
Umber, Raw, Amer.....	1 1/2¢ 2¢
Yellow, Chrome.....	10 1/2¢ 25¢
Vermilion, American Lead.....	10¢ 10¢
Vermilion, Quicksilver, bulk.....	67¢
Vermilion, Quicksilver, bags.....	67¢
Vermilion, English, Import.....	40¢ 40¢
Vermilion Chinese.....	\$1.05 1.20
Colors in Oil.	
Black, Lampblack.....	12¢ 14¢
Blue, Chinese.....	36¢ 40¢
Blue, Prussian.....	32¢ 38¢
Blue, Ultramarine.....	13¢ 16¢

Brown, Vandyke.....	9 1/2¢ 13¢
Green, Chrome.....	10¢ 12¢
Green, Paris.....	21¢
Sienna, Raw.....	10¢ 13¢
Sienna, Burnt.....	10¢ 13¢
Umber, Raw.....	9 1/2¢ 13¢
Umber, Burnt.....	9 1/2¢ 13¢
Miscellaneous.	
Barytes, Foreign, 10 ton.....	\$19.00 21.00
Barytes, Amer. doated.....	19.00 20.00
Barytes, Crude, No. 1.....	9.00 10.00
Chalk, in bulk.....	2.50 2.60
Chalk, in bbls.....	100¢ 35¢
China Clay, English.....	17.50 17.50
Cobalt, Oxide.....	100¢ 2.25 2.50
Whiting, Common.....	100¢ 40¢ 60¢
Whiting, Gliders.....	45¢ 65¢
Whiting, extra Gliders.....	55¢ 58¢
Putty.	
In bladders.....	\$2.25
In bulk.....	1.25
In cans 1 lb to 5 lb.....	3.25
In cans 13 lb to 25 lb.....	3.25
Spirits Turpentine.	
In Southern bbls.....	43 1/4¢ 44¢
In machine bbls.....	44¢ 44 1/2¢
Glue.	
Cabinet.....	11 1/2¢ 16¢
Extra White.....	18¢ 21¢
French.....	13¢ 40¢
Irish.....	13¢ 14¢
Low Grade.....	9¢ 12¢
Medium White.....	14¢ 16 1/2¢
Animal, Fish and Veget-	
table Oils.	
Linseed, City, raw.....	gal. 63¢ 64¢

Linseed, City, boiled.....	63¢ 64¢
Linseed, State and West'n, raw.....	62¢ 63¢
Linseed, raw Calcutta see.....	65¢
Lard, Prime.....	77¢ 78¢
Lard, Extra No. 1.....	63¢ 60¢
Lard, No. 1.....	43¢ 40¢
Cotton-seed, Crude.....	40¢ 41¢
Cotton-seed, Summer Yellow,	
prime.....	40 1/2¢ 41 1/2¢
Cotton-seed Summer Yellow,	
off grades.....	40¢ 41¢
Sperm, Crude.....	71¢ 72¢
Sperm, Natural Spring.....	74¢ 76¢
Sperm, Bleached Spring.....	75¢ 77¢
Sperm, Natural Winter.....	74¢ 76¢
Sperm, Bleached Winter.....	74¢ 76¢
Tallow, Prime.....	60¢ 65¢
Whale, Crude.....	44¢ 47¢
Whale, Natural Winter.....	44¢ 47¢
Whale, Bleached Winter.....	43¢ 46¢
Menhaden, Crude, Sound.....	32¢ 33¢
Menhaden, Light Strained.....	32¢ 33¢
Menhaden, Bleached Winter.....	31¢ 32¢
Menhaden, Ex Bleached Winter.....	30¢ 37¢
Cocunut, Ceylon.....	74¢ 8¢
Cocunut, Cochln.....	0¢ 9 1/2¢
Cod, Domestic.....	85¢ 91¢
Cod, Newfoundland.....	85¢ 91¢
Red Waine.....	12¢
Red Saponified.....	5 1/2¢ 6 1/2¢
Olive, Italian, bbls.....	53¢ 55¢
Neatsfoot, prime.....	57¢ 59¢
Palm, prime, Lagos.....	5 1/2¢ 6¢
Mineral Oils.	
Black, 20 gravity, 25 30 cent	
test.....	gal. 9 1/4¢ 10 1/4¢
Black, 20 gravity, 15 cent test.....	10¢ 11 1/2¢
Black, sum ner.....	9 1/4¢ 9 1/2¢
Cylinder, light filtered.....	14 1/2¢ 17 1/2¢
Cylinder, dark filtered.....	11 1/2¢ 15 1/2¢
Paraffine, 908-907 gravity.....	12¢ 12 1/2¢
Paraffine, 903 gravity.....	11 1/2¢ 11 1/4¢
Paraffine, 883 gravity.....	9¢ 9 1/2¢
Paraffine, red, No. 1.....	12 1/2¢ 13 1/2¢
In small lots 1/2¢ advance.	

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades,
and a standard authority on all matters relating to those branches of industry.

RATES OF SUBSCRIPTION: INCLUDING POSTAGE.

UNITED STATES, BRITISH AMERICA, MEXICO, HAWAII, CUBA, PHILIPPINE ISLANDS.

Regular Edition, Issued every THURSDAY morning,	\$5.00 a year
Two Dollar Edition, large number FIRST and THIRD THURSDAYS of every month, Bulletin number each intervening Thursday,	2.00 "
Dollar Edition, large number FIRST THURSDAY of every month, Bulletin number each intervening Thursday,	1.00 "

OTHER COUNTRIES: Regular Edition, \$5.00; Two Dollar Edition, \$2.50; One Dollar Edition, \$1.25.

RATES OF ADVERTISING: ONE INCH.

ONE INSERTION, - - - - -	\$3.00	SIX MONTHS, - - - - -	\$45.00
ONE MONTH, (5 times) - - - - -	11.25	ONE YEAR, - - - - -	75.00
THREE MONTHS, - - - - -	26.25	Rates for larger spaces quoted on application.	
New York (Main Office),	232-238 William Street,	DAVID WILLIAMS CO., Pub'rs	
Philadelphia,	Forrest Building, 117-119 South Fourth Street,	THOMAS HOBSON, Manager.	
Pittsburgh,	Hamilton Building, 335-337 Fifth Avenue,	ROBERT A. WALKER, Manager.	
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AUSTRALIAN OFFICES:	Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Palings Building.		

Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.
Newsletters or Booklets in any part of the world may obtain The Iron Age through the American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.
Entered at the Post Office, New York, as Second-class Matter.

